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THE ACCESSORY and GARAGE JOURNAL

VOL. VI. NO. 1. PAWTUCKET, R. I., MAY, 1916 $2.00 the YEAR

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MULTIBESTOS

THE GRIP THAT GRIPS

Wise Motorists drive "Safe in the Grip of Multibestos."

Others take a chance with "just brake lining."

Does it pay to gamble with something on which your life depends?

STANDARD WOVEN FABRIC CO.
FACTORIES
Framingham and Walpole
Mass.

MULTIBESTOS TRADE MARK REG. U.S. PAT. OFF. PAT. APP'D FOR

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MULTIBESTOS

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This trade mark indicates a high grade, guaranteed, well designed and honestly made wrench—a real tool.

It Catches the Eye

Read this Ad. Carefully, Mr. Dealer

On this Board are shown tools that will fit any nut or bolt on a Ford car from any angle or position. The only wrenches that will do this.

Every wrench a tested, proven, practical, economical tool and just as desirable for the owner as for the repairer.

Tools of the greatest utility which can be used in any work on any car at home, on the road or in the shop.

Walden Worcester Wrench Display Boards are a decided attraction in any store. They occupy but small space, are a constant working salesman, draw trade, bring profits and save clerks' time. Yet they are free to Walden Worcester Wrench dealers.

Ford owners and repairers are buying quick working, special tools and most of them are using Walden Worcester Guaranteed Wrenches---tools that are made right and to last---for good work done quickly, for service and satisfaction.

Look for the Name WALDEN-WORCESTER Stamped on Every Wrench

Standard Guaranteed Tools

READ THIS

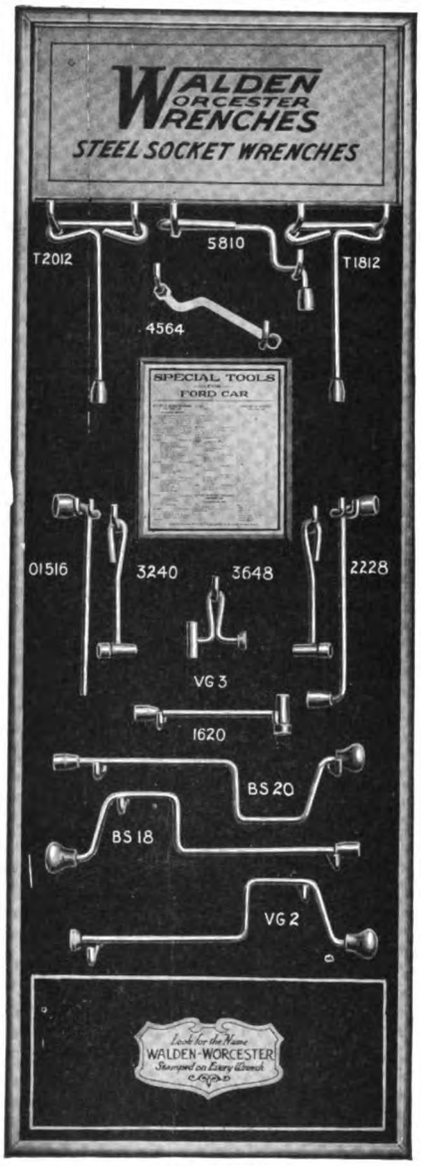
See our condensed catalog in the Automobile Trade Directory, "The Red Book," Pages 769-770-771-772-773-774, April issue.

Order one of these No. 78 Boards, $24 Net, from your jobber or direct from the factory. But get one anyway.

The Walden Manufacturing Co.

60 Commercial Street,
WORCESTER : : : MASSACHUSETTS

Cheap makeshift, nameless tools, made and sold for profit only, will not build up a permanent demand or a profitable business.



NO. 78 SET
STOCK AND DISPLAY BOARD
SPECIAL WRENCHES FORD CAR

THE BOARD

This is the handsomest wrench display board we have seen. The face of the board is covered with sheet metal, which is lithographed in black and golden rod. The center panel in black and white contains the Directory and full information regarding all the different wrenches. The number of each wrench appears on the board as shown in the picture. The hooks are held by nut and check nut and will remain in permanent position.

No. 78 Display and Stock Set

6 T-2012	.40	$2.40
6 5810	.35	2.10
6 T-1812	.40	2.40
6 4564	.50	3.00
6 01516	.40	2.40
6 3240	.30	1.80
6 No.3V.G	.30	1.80
6 3648	.30	1.80
6 2228	.40	2.40
6 1620	.35	2.10
6 B.S.18	.65	3.90
6 B.S.20	.65	3.90
6 No.2V.G.	.65	3.90
	Total....	$33.90

Special Net Prices to the Trade

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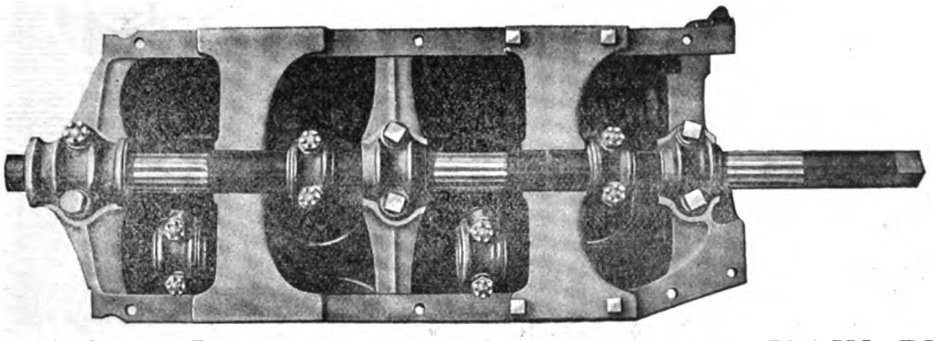
MORE DYER PRODUCTS

FOR THE REPAIRMAN

EARN $2.00 or $3.00 PER HOUR

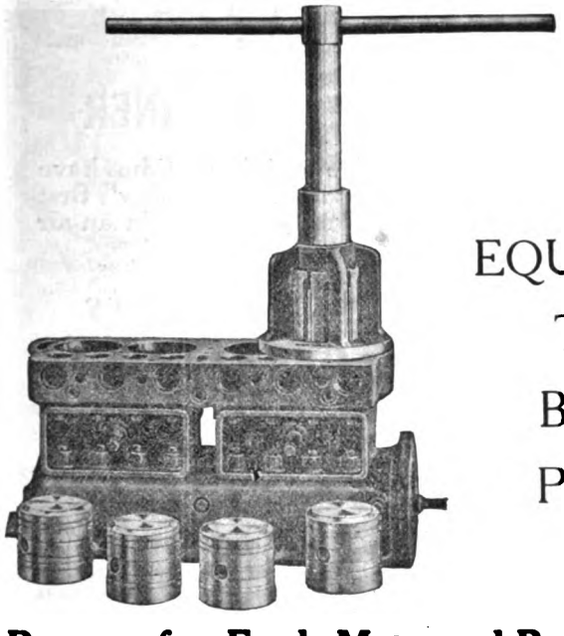


Don't Stick to Questionable Hand Labor at 75c per hour

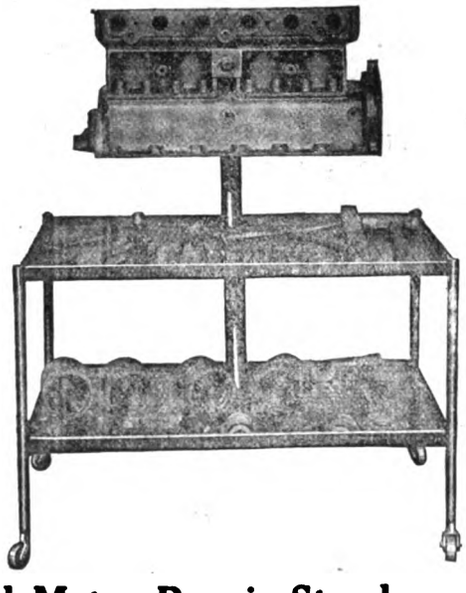
REAMER FOR FORD CONNECTING ROD AND MAIN BEARINGS

Reams Bearings True With Face of Block. Does Not Follow Worn Bearing

This tool does away with the tedious method of scraping the bearings by hand, and with it can be done much more accurate work. Connecting rods are made to line perfectly with the cylinders. Having leads of .004 of an inch at the end of each Reamer flute eliminates the long and difficult work of adjusting a worn bearing to the right size, and avoids taking any more of the metal out of the bearing than is necessary to secure a perfect fit. It has two adjustable guides to line the main bearings perfectly true. With this Reamer a job can be done in a very few minutes, leaving a smooth glassy finish, much more satisfactory than the old method of hand scraping.



BUY EQUIPMENT THAT BRINGS PROFIT



Reamer for Ford, Metz and Buick 10 Cylinders

A tool that will widen the field of the repairman, insure big profits and add a large number of satisfied customers.

The engine is the vital part of an automobile and reboring 1-32 of an inch with this Reamer and fitting new pistons and rings makes the motor run better than when new.

A properly fitted piston is the most important repair to be given an old motor; it stops all knocking and piston play; eliminates the most of motor vibration thus prolonging the life of the car and adding to the comfort of passengers.

Ford Motor Repair Stand

This stand is made primarily for use while overhauling a Ford Motor, but if desired can be adapted to hold other makes of engine. It is manufactured with a telescoping post, and can be adjusted to any height required. Motor can be turned to any position. The two shelves are made of steel 30" long by 20" wide, welded to steel posts. Malleable iron casters are furnished with each stand, making it easy to roll the table to any position desired in the shop. The advantage of this stand and table where everything necessary can be placed on the two shelves within easy reach, over the present method of assembling engines on the bench with tools and parts scattered in different places, is apparent.

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QUALITY

BRUNNER

SERVICE

PORTABLE & STATIONARY

AIR COMPRESSORS

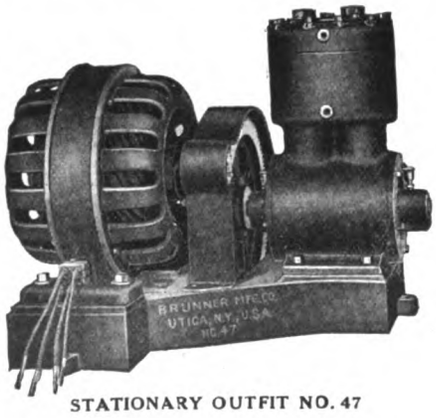
The Garageman Who Thinks---Invariably Orders a BRUNNER

TIME was when the average garageman bought purely on the "price basis," but times have changed. The average garageman today is a businessman who considers "quality" first and "price" afterwards, because he knows that "quality" is absolutely essential in an air compressor if the kind of service that holds the trade is an object.

Quality and Service Mean Dollars and Cents

to the "thinking" garageman who predominates the garage business today--that is just why the demand for BRUNNER Equipment is steadily increasing. As the thinking man in the garage business increases, so increases the sale of BRUNNER Equipment, because he has learned that quality and service are built into the BRUNNER.

The BRUNNER Air Compressor has been selling strictly on its merits for many years, and its enviable reputation is built upon many years *actual* and *satisfactory performance in thousands of garages.* When you buy a BRUNNER you can depend upon receiving a new high grade machine from stock, that has never been used, and not one that may have been shipped to a half dozen more garages on trial before you get it. It is not necessary to ship BRUNNERS on trial, they do just what we say they will do and all that is necessary is for you to tell us what you have to do and we will guarantee to ship you an outfit that will *do it* and *do it right.*



STATIONARY OUTFIT NO. 47

Read Our Garageman's Handbook on Compressed Air. Post Yourself On the Garage Air Compressor Situation.

Our hand book is free for the asking, and it will show you how to discriminate between the high class, efficient air compressor and the cheaply constructed "side line" pump or the "impossible mechanical freak". If you buy a real high grade air compressor you won't have any compressed air experiments to conduct in your garage for the benefit of some inexperienced manufacturer.

Send For Our No. 13 Catalogue and Handbook, and the Name of the Brunner Jobber Who Covers Your Territory

BRUNNER MFG. CO. DEPT. A. UTICA, N. Y.

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ARE YOU BUYING METAL SPECIALTIES?

A great number of Jobbers and Accessory and Supply Dealers and Garages, Repair and Machine Shops that were not previously regular customers, have become constant patrons during the last 18 months. Many manufacturers could not fill orders and supply standard quality stock at prices that would insure sales and afford satisfactory profit.

We have filled all orders promptly with the highest quality stock and at prices that competitors cannot meet.

We are the largest manufacturers of metal specialties of the industry. No other makes as complete a line. No other equals our standard in quality, and none sells at prices we have established.

We specialize production of metal specialties to specification. Our plant is the largest, and best equipped. Our workers are expert mechanics.

Unlimited buying capacity, enormous production and the most economical factory equipment mean that every customer obtains the best in material, quality and workmanship. Our shipping facilities are unequalled. We can serve you anywhere in America.

Prices are increasing! Examine your stock and order from us today. You can save money on all standard lines. Send for latest catalogue and price lists.

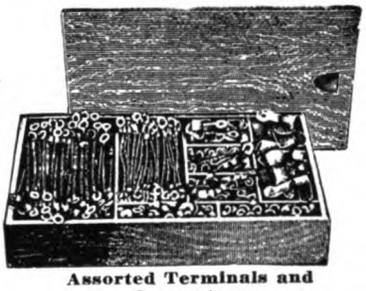
OUR REGULAR STOCK LINE INCLUDES Electric Motor Driven Horns, Electric Vibrator Horns, Mechanical Horns, Motorcycle Horns, Copper-Asbestos Gaskets, Auto and Motor Boat Push Buttons, Shims and Shim Stock, Washers and Stampings, Spring Battery Connectors, Gasket sets for Ford cars, Ford Electric Lighting Outfits, Ignition Wiring Assemblies, Hard Rubber Switches, Wire Terminals, Brass and Steel Shim Stock and Hose Bands.

Ford Car Lighting Outfit

The Highest Grade, Lowest Priced Mechanical Horn Made.

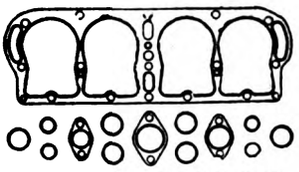
Clero Horns

A Size and Model for Every Vehicle.



Assorted Terminals and Connectors

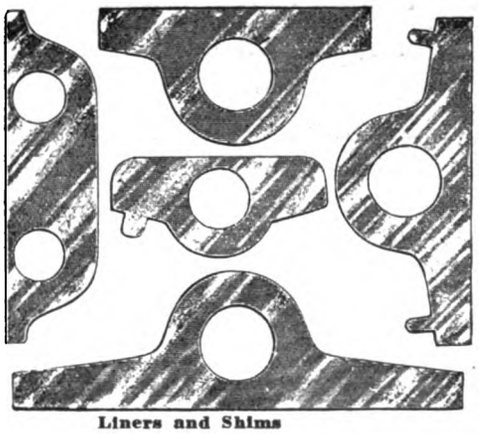
Electric Push Button



Ford Engine Gasket Sets

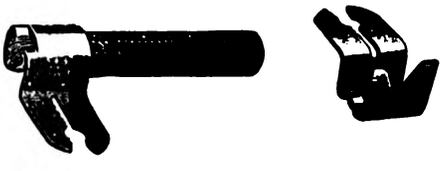
Assorted Shim Stock

Exhaust Flange Gasket



Liners and Shims

Perfection Spring Battery Connector



Copper and Brass Cable Terminals

FITZGERALD MANUFACTURING CO., Torrington, Conn.

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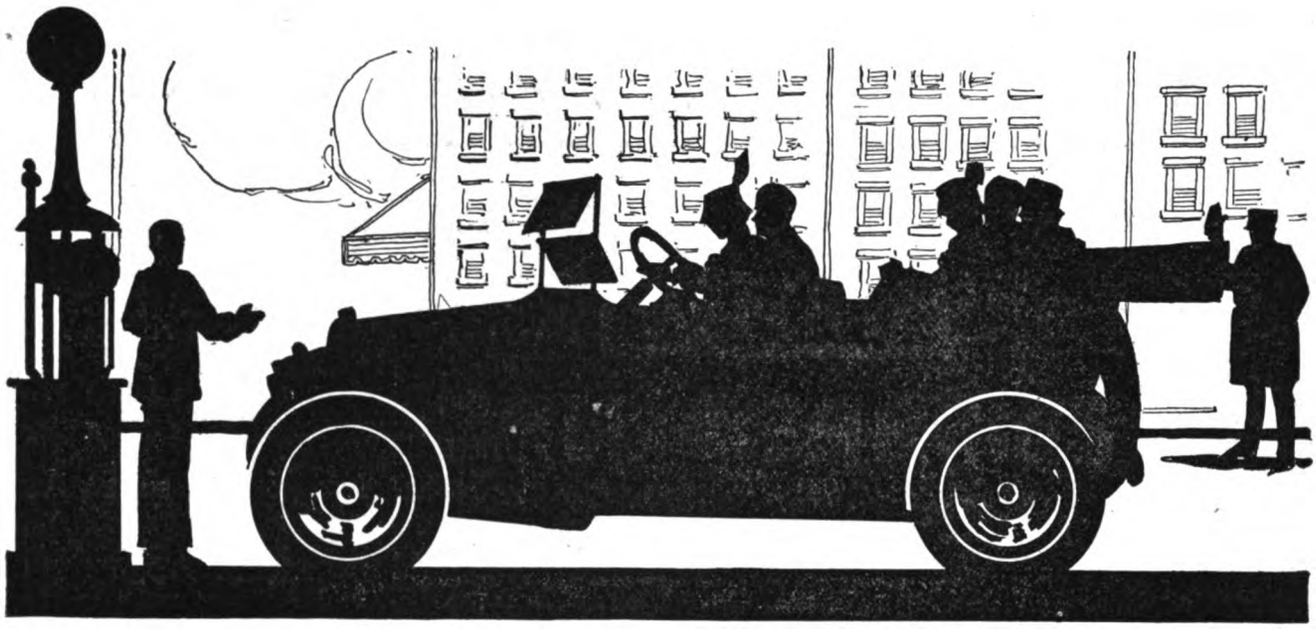

Motorists have at last got wise to the difference in curb pumps

Dr. J. C. A._____ of Brooklyn told the writer that he would drive a full mile out of his way, passing all sorts of other pumps to get his gasoline at a certain place where they had a Wayne pump.

"Why?" I asked.

"Quicker service for one thing; but the chief reason is that there seems to be more "kick" to the gas. I thought at first it was the particular brand of gasoline, but I've learned by buying the same brand elsewhere, on tours, that it must be the filter in the Wayne pump."

And you can multiply Dr. A_____ by many thousands

So much so that the word "Wayne" on a pump has already come to be recognized as a guarantee of ***cleanness*** of the gasoline the pump will deliver.

And when a few thousand more Wayne MONARCHS dot the highways it will be pretty slim picking for the slow pumps in-between because the MONARCH adds to the "clean gasoline" features of the other WAYNE pumps two big exclusive favor-winning features.

1. **Its speed—20 gallons a minute.**
2. **Its big Clock Dial**

that tells the motorist just what he's getting in his tank, with every turn of the crank.

Isn't it better business to have this tide of popular favor ***on your side*** than to have it pulling against you?

WAYNE pumps cost so very little more than common pumps that the extra profit on one day's business a month, for a year may easily make up the difference.

Send for our descriptive circular.

WAYNE OIL TANK AND PUMP COMPANY

2 Canal Street, Fort Wayne, Ind.

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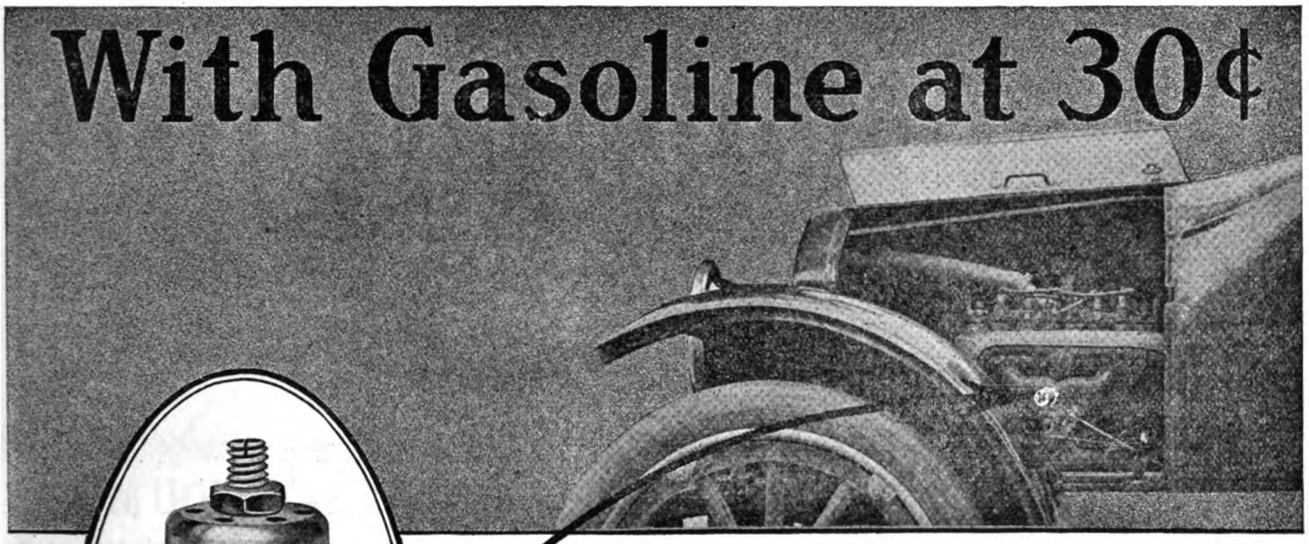
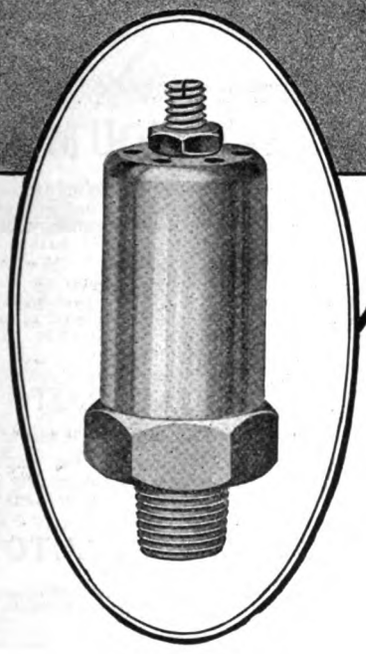
With Gasoline at 30¢





Will a Gasoline-Saver Sell?

Will a fish swim? Will a hungry man eat? Will a valve that saves gasoline sell? Why you—and every man in this automobile game, knows mighty well that with gasoline mounting up toward 30 cents, anything that saves fuel for the motorist will sell like a sporting extra on the World's Series. The greater the saving the faster the sales. All of which means that one of the biggest, livest, sellers of the 1916 season is surely going to be the

BRUGAN ECONOMY VALVE $4

How Installed

This valve can be installed in any engine in a few minutes. It should be located in the intake manifold as near the carburetor as possible. It is threaded for ¼" standard pipe tap.

What It Does

By admitting air to the intake manifold it improves combustion, and will save from 15 to 35 per cent. gasoline, or will give 25 to 40 per cent. more mileage, will increase the power of the engine, make hill climbing easy, will let the engine pick up faster when accelerating and will cut down the amount of carbon formation in the cylinders.

Everything about it is right—it will save from 15 to 35 per cent. of the gasoline bill—it will positively give greater speed and greater power to any car—it is well built and simple. The price, $4.00, puts it in the reach of ordinary car owners and its savings must appeal to **every** car owner. The discounts make it a good line for you to handle.

It is adjustable, can be regulated to act most efficiently for each type of motor and for each car operator's individual requirements. It is of metal—has no rubber or leather washers to be overheated and get out of order.

Now we are ready to fill your orders and the sooner you start selling these valves the sooner we will all get our share of the savings they make for your customers. Write today for our proposition. Use coupon and get full information.

The Brugan Company

Bangor, Maine

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The BRUGAN COMPANY, Bangor, Maine.

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D. O. Black, Jr., Secretary
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New 6-cyl. 4x4½ Motors. Cylinders cast separate, 7-bearing shaft for main frame, 26" suspension, cone clutch, pump, fan $175.00
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OUR little booklet lists the proper lamps for all 1916, 1915 and 1914 electrically-lighted cars. With it your clerk can't make a mistake, particularly when he has at hand the

EDISON MAZDA

Automobile Lamp Assortment

This compact little stock contains all the sizes necessary to equip 90% of all the cars that come to your door.

Moreover, the entire assortment of less than 200 lamps costs you no more than a tire or two. And the margin of profit makes it well worth your while to make your store the headquarters for lamp renewals.

EDISON LAMP WORKS
of General Electric Company
Harrison, N. J.
6018

Write now for this booklet and full particulars of our attractive agency proposition before someone else gets your territory.

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One of the Reasons Why

60 Automobile Builders Prefer AC Spark Plugs

Testing AC Plugs for Leaks

Each AC Spark Plug is subjected to 150 lbs. air pressure, as shown above, to assure it's being "gas-tight."

A C Spark Plug supremacy has been established not only by severest tests under the personal direction of critical experts, but by an efficiency in every day performance that instantly wins favor of every car owner. Sixty of the leading automobile manufacturers, to whom efficiency must be proven, acknowledge the A C as the standard spark plug of America and give it their overwhelming preference, staking their prestige upon its performance.

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Cadillac	National	Kissel Kar
Marmon	Velie	Knox
Hudson	Jackson	Lambert
Chalmers	Apperson	Maxwell
Hupmobile	Davis	McLaughlin (Canada)
Chandler	Detroiter	Monroe
Haynes	Paterson	Pilot
Chevrolet	Moon	Sayers-Scovill
Dort	McFarlan	Crane-Simplex
Cole	Westcott	Singer
Buick	Enger	United Truck
Oakland	Glide	Wilcox Trux
Oldsmobile	Lexington-Howard	Austin
Dodge Brothers	Brockway Truck	Gramm Trucks
Reo	Case Tractors	Jeffery
Paige	Chase Truck	Mercer
Peerless	Daniels	Stephens'
Stearns-Knight	Empire	Palmer-Moore

A C Spark Plugs are in greatest demand on account of their proven supremacy, and, therefore, are a better business-getter for dealers than all other makes combined. Special Plugs for Ford, Overland and Studebaker motors, insuring highest efficiency.

Champion Ignition Company

Flint, Michigan

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What would have prevented most of the auto mishaps you know of?

Wouldn't good brake lining have done it?

Careful drivers know, or they are fast learning, the false economy of friction-shy brake lining.

They are learning the advantage of Thermoid 100% Brake Lining---an advantage that may any time mean the difference between a close shave and a crumpled car---a narrow miss or a crushed body.

Thermoid
HYDRAULIC COMPRESSED
Brake Lining - 100%

Brake lining that is not 100% is like a heart failure. A sudden shock—a Big Emergency—may mean death.

Thermoid Brake Lining has 100% gripping and holding power even when it is worn paper thin.

That means that lined with Thermoid the brakes will hold, not only when the car is just being stopped but when it must stop quick or hit something.

Thermoid wears because it is cured under hydraulic compression into a solid substance of uniform density. It contains 50% more material foot for foot than do other kinds. Watch the brakes - remember that without a lining they are not brakes at all. Consider, too, how much better it is to see they are lined with Thermoid Brake Lining than to have a finely equipped motor crumpled into junk in an instant, or to have to race to a hospital with a child or adult that would not have been hit if the brakes had held.

Thermoid will make good or we will

Thermoid Rubber Company

TRENTON, N. J.

Makers of Nassau Tires and Thermoid Garden Hose

OUR GUARANTEE

Thermoid Brake Lining is absolutely guaranteed to give more satisfactory results and to outwear any other lining manufactured. Not affected by heat, oil, water, gasoline or dirt.

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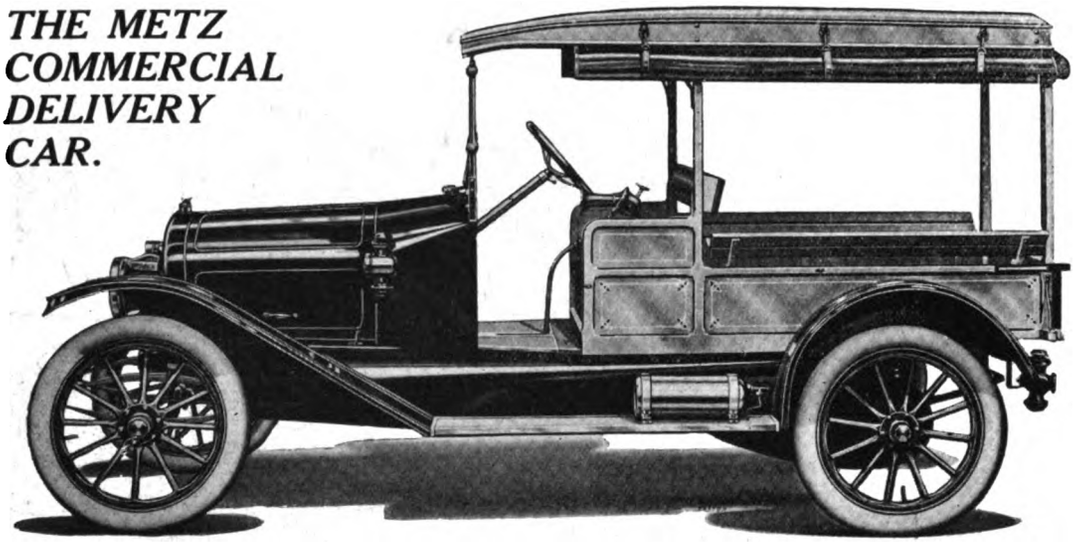
It Will Fit With Any Dealer's Business

THE METZ COMMERCIAL DELIVERY CAR.



Metz Model G.—25 H. P. Delivery Car, Complete, with side curtains, $525.00. Body Measurements, length 54" inside; 41½" wide inside; 49 inches high. With Gray and Davis Electric Starter and Electric Lights $575.00.

For a light delivery car---well designed and well built---selling at a low price---and capable of meeting light delivery requirements in all lines of business---THERE IS A UNIVERSAL DEMAND.

The Metz Commercial Delivery is such a car. It has been tried and proven by thousands of business men. It is exceptionally economical to operate and maintain. It is so simple anyone can drive and care for it. Low upkeep and tire costs recommend it to users.

In capacity the Metz will meet the requirements of all your prospects who have light delivery work. It is even more dependable and it is cheaper than a horse and wagon with twice the delivery capacity. It is sold complete---ready for service. When not in use it requires no expenditure or attention.

There is no other car just like the Metz in the delivery field. It has great power and is more flexible in operation than any other. Any dealer whether in passenger cars or trucks—or a prospective dealer who is about to start in business—can handle it without confliction with other makes. They will be able to meet the increasing demand for this type of car. A small investment will yield a worth while profit and a permanent business.

Metz national advertising is backed by high grade dealers co-operation. The Metz reputation for quality and service add value to the agency and make sales.

Write today for territory and detailed agency proposition. The facts will interest and surprise you. The Metz agency is big enough for the largest dealer and yet it is not too big for the small agent.

METZ COMPANY

Waltham, Address Dept. F. **Mass.**

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Handsome Mahogany-finished "Silent Salesman" Display Stand FREE

Six Pints, $ .50 each, - - $3.00
Six Quarts, $1.00 each, - - 6.00
Four Half-Gals., $1.50 each, 6.00
Two Gallons, $2.50 each - 5.00
Total, 20.00

All For
$12.00
(We Pay the Freight)

YOUR IDEAL POLISH STOCK

as shown in the photographic reproduction, will **enable you to** co-operate in the nation-wide "Brighten-Up" campaign, **now in** progress with the active support of more than a score **of the lead-**ing automobile manufacturers.

O-So-Ezy Cedar Oil Polish is the accepted **medium of** this campaign.

It is O-So-Ezy which the manufacturers of Buick, Reo, Oldsmobile, Chalmers, Hupp, Winton, Detroit Electric, Paige, Maxwell, Chevrolet, Grant, Haynes, Scripps-Booth, Saxon, Empire, Abbott, H. A. Lozier, Inter-State, Briscoe, Detroiter and King include as standard equipment in each new car shipped, and recommend to their dealers and customers.

Whether or not you handle accessories, you will need a stock of O-So-Ezy. Your customers will demand it. **And the "Silent** Salesman" will **prove a mighty** profit-maker.

Take immediate **advantage of** this introductory **offer. Send your** cash with order.

O-So-Ezy Cedar **Oil Polish is** made by the

O-So-Ezy Products Company
264-268 Jefferson Ave. Detroit, Mich.

Pacific Coast Representative
The Phil B. Bekart Co., **San Francisco.**

*First Prize and Gold Medal—**Highest Award—Panama-Pacific Exposition, San Francisco***

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SHAFT-DRIVE

Genemotor

TRADE MARK

THE RELIABLE STARTER AND LIGHTER FOR THE FORD CAR

For the car used and endorsed by all nationalities, there is one predominating Starter and Lighter—Shaft-Drive Genemotor. It fits the Ford as a Perfect Working Unit and is commensurate with the efficiency of this remarkable car, now operated by over 1,000,000 satisfied owners.

"U S L" Battery Standard Equipment.

Built by the General Electric Company

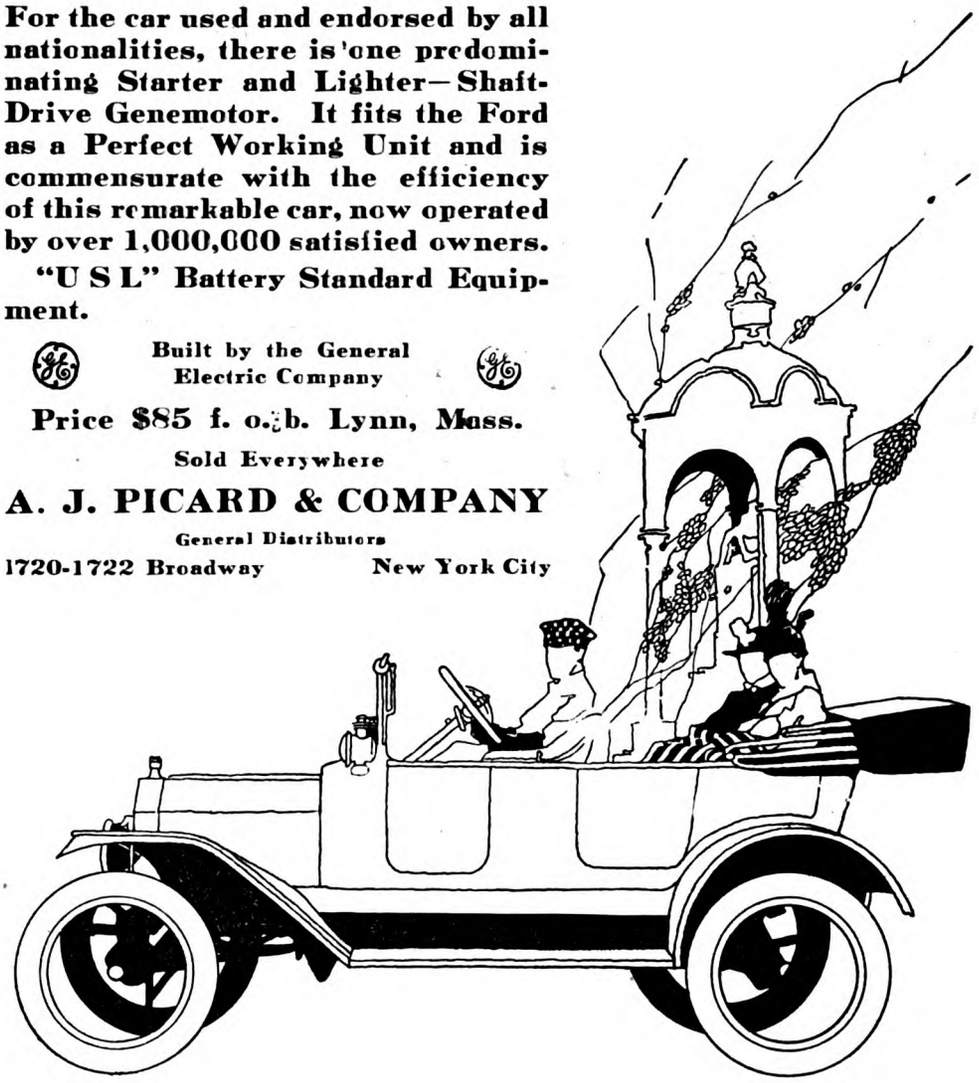
Price $85 f. o. b. Lynn, Mass.

Sold Everywhere

A. J. PICARD & COMPANY

General Distributors

1720-1722 Broadway New York City



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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

THE NEW YORK PUBLIC LIBRARY 774927 ASTOR, LENOX AND TILDEN FOUNDATIONS R 1917 L

VOL. VI. 774927 PAWTUCKET, R. I., MAY 1916. No. 1

GIANT MERGER OF ACCESSORY AND PARTS MAKERS.

The United Motors Corporation Has Been Formed to Take Over the Controlling Interests of the Five of the Leading Manufacturing Companies in Their Particular Lines of Industry—Merging of Interests Is Expected to Double Aggregate Earnings.

Motor vehicle industrial interests have found much for speculation in the formation of the United Motors Corporation, in which are merged the Hyatt Roller Bearing, the Remy Electric, Dayton Engineering Laboratories, New Departure Manufacturing and the Perlman Rim companies. Aside from the importance and size of the new combination, the expectation of an announcement that more companies have joined the merger is concerning some trade interests.

The United Motors Corporation, which is incorporated under the laws of New York, is a holding company, owning the securities of the five parts makers mentioned above, each of which is making the standard product in its line. The subsidiary companies will retain their individual identities and remain in the same management as before.

The authorized capitalization of the new corporation is 1,200,000 shares, no par value. The stock started out at 62 and in one day after the opening of the subscription books it had advanced 12 points, to 74. The offering was so heavily oversubscribed that the allotments were limited to 55 per cent. of the amounts subscribed for.

It is announced that only 500 shares of the stock, to be known as Class B, are entitled to vote, and that the operating capital of the company is to be $6,000,000.

The directorate for the first year, the members of the board being representatives of the companies in the merger, include the following: A. P. Sloan, Jr. (Hyatt), E. A. Deeds (Delco), DeWitt Page (New Departure), S. A. Fletcher (Remy), and L. G. Kaufman, president of the Chatham and Phoenix National Bank, New York. The officers are A. P. Sloan, Jr., president; A. E. Deeds, vice president; DeWitt Page, secretary and treasurer; L. G. Kaufman, chairman of the finance committee.

While the name of W. C. Durant, president of the Chevrolet Motor Company and closely identified with other large financial interests, does not officially appear in the management of the new corporation, it is generally understood he is one of the big factors and that he engineered the deal.

It is confidently predicted that the five companies will show in the new corporation net earnings this fiscal year of approximately $13,750,000. For the last fiscal year the various units reported net earnings as follows:

Delco	March 31, 1916	$1,554,319
Hyatt	April 30, 1916	2,484,964
New Departure	April 30, 1916	1,409,244
Remy	March 31, 1916	1,030,103
*Perlman Rim		
Total		$6,478,630

*Company not incorporated until March, 1916.

Recently large extensions have been made to the plants of the first three named companies, and in compiling the following estimate of the net earnings that can be expected from the United Motors Corporation for this fiscal year that fact has been taken into consideration:

Delco	$2,380,000
Hyatt	4,250,000
New Departure	3,000,000
Remy	1,600,000
Perlman Rim	2,500,000
Total	$13,730,000

"The companies comprising the United Motors Corporation," said President A. P. Sloan, "will be operated similarly to those now forming the United States Steel Corporation. The companies have associated for the purpose of a further constructive development of plants and products. As they stand in this new relation today they are backed by the strongest group of bankers in New York."

The Dayton Engineering Laboratories Company, Dayton, O., is better known as the manufacturer of Delco starting, lighting and ignition devices. It furnishes about 25 per cent. of the starting and lighting equipment used by automobile makers.

The Hyatt Roller Bearing Company, Newark, N. J., and Detroit, is an old established concern which specializes in roller bearings and has a plant with daily capacity of about 40,000 sets.

The New Departure Company, Bristol, Conn., was organized 24 years ago and owns fundamental patents on annular bearings. It has three plants, at Bristol, Hartford and East Bristol, producing about 30,000 sets daily.

The Remy Electric Company, Anderson, Ind., specializes in ignition devices of a standard character and are widely used.

The Perlman Rim Corporation, New York City and Jackson, Mich., was recently organized with an authorized capitalization of 100,000 shares, no par value. Its own fundamental patents, controlling a demountable rim for automobiles, and rims made under its patents, are in use by approximately 75 per cent. of the motor vehicles made in this country.

NEW PRESIDENT FOR NORMA.

At the annual meeting of The Norma Company of America, held recently in the New York City offices, W. M. Nones was elected president and treasurer. Prior to this Mr. Nones was secretary-treasurer, as well as general manager. In his new position he will continue to exercise the general management of the concern, which in five years has grown from a small import business to a commanding position among the American manufacturers of ball, roller, thrust and combination bearings.

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Locomobile Profits Show Improvement.

Company Reports in Annual Statement of Finances a Large Increase in Surplus.

The annual statement of the Locomobile Company of America shows an increase of $500,000 in the surplus. The profit and loss surplus is shown to be $1,307,589, as compared with $841,886 last year. Over $400,000 has been put into new machinery last year and this account now totals $2,452,697. Cash and debts receivable have decreased by about $200,000, and patents, trade marks and good will are now held at $5,515,952, which is about $200,000 less than last year. The following is the report:

Assets.	1916	1915
Real estate	$186,500	$186,500
Machinery	2,452,697	2,029,527
Merchandise, material, stock in process	4,148,055	4,236,684
Cash and debts receivable	830,554	1,049,014
Patent rights, trade marks and good will	5,515,952	5,310,793
Sundries	206,921	203,511
Total.....	$13,340,681	$13,015,031
Liabilities.		
Capital stock.....	$6,250,800	$6,250,800
Accounts payable..	317,673	397,426
Funded debt.....	2,018,500	1,176,000
Floating debt.....	2,775,681	2,789,448
Reserves	670,437	559,469
Profit and loss surplus	1,307,589	841,886
Total.....	$13,340,681	$13,015,031

HYATT SERVICE MEN MEET.

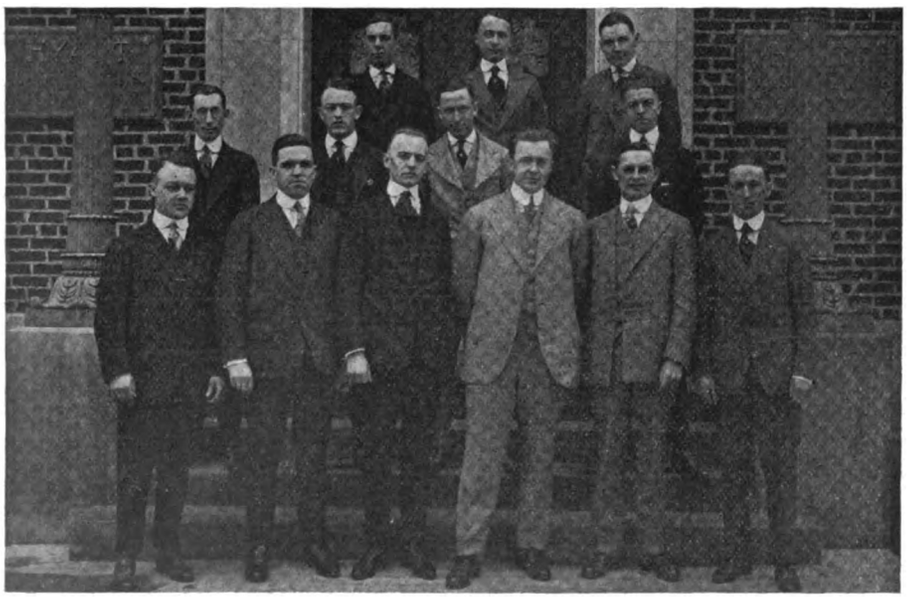
Hyatt service managers from every city in the country where there is a Hyatt branch were in attendance at the first annual convention held at the office of the Hyatt Roller Bearing Company, Detroit. During the first day's session A. K. Hebner, service supervisor, talked about service development. There also were talks by Horace A. Brown, Jr., of the engineering sales department, W. E. Biggers, advertising manager, and K. K. Hoagg of the experimental department.

The second day of the convention was given over to a visit to the Ford company's plant and addresses by Henry T. Ewald, C. M. Eason of Chicago, manager of the tractor bearings department, and G. B. Keether, general sales manager. The morning of the third day was devoted to a general service conference and to a talk by R. S. Lane, chief engineer, and visiting Hyatt warehouse.

Those present at the convention were: J. J. Hanrahan, Los Angeles; J. W. Hutchinson, Boston; L. R. Remington, Chicago; R. B. Campbell, Atlanta; K. H. MacQueen, Newark, N. J.; N. S. Swan, Minneapolis; H. Jay, San Francisco; A. W. Robbins, Seattle; A. K. Hebner, service supervisor; R. C. Brower, recently appointed travelling supervisor; J. W. Taylor, assistant service supervisor.

DURSTON GEAR COMPANY, INC.

The gear department of the Lefever Arms Company, Syracuse, N. Y., has grown so big and important during recent months that the management has deemed it advisable to concentrate on that business, disposing of the gun department. The proceeds obtained from the sale of assets of the gun department, which did not include factory nor machinery, have been turned over to the gear department. June 1 the Lefever Arms Company of Syracuse, N. Y., goes out of existence as a corporate name, the gear business being continued under the same management and ownership in the name of the Durston Gear Company, incorporated until the laws of New York.



Annual Convention of Hyatt Service Managers—Reading Left to Right, Top Row: A. W. Robbins, Seattle; N. S. Swan, Minneapolis; J. W. Taylor, Detroit; Middle Row, J. W. Hutchinson, Boston; H. Jay, San Francisco; K. H. MacQueen, Newark; R. B. Campbell, Atlanta; Bottom Row: R. C. Brower, Traveling Supervisor, Detroit; J. J. Hanrahan, Los Angeles; L. R. Remington, Chicago; R. S. Lane, Chief Engineer, Detroit; B. G. Koether, General Sales Manager, Detroit; A. K. Hebner, Service Supervisor, Detroit.

Paige-Detroit Declares Stock Dividend.

This Action Makes a Total of 180% in Less Than One Year, Not Including 5% Cash a Month.

According to an announcement from Harry M. Jewett, president of the Paige-Detroit Motor Car Company, the directors of the company at a recent meeting declared an 80% stock dividend, payable to stockholders of record May 13. They also decided to increase the capital of the company from $1,000,000 to $2,000,000 and to reduce the par value of each share of stock from $100 to $10.

The stock dividend is to be 80% of the present outstanding capital stock of $500,000 and will represent stock of the par value of $400,000, which it is proposed to issue from the present authorized capital that has been retained in the company's treasury. At the present market price of Paige-Detroit stock, the dividend has a market value of more than $3,500,000.

As the company declared a 100% stock dividend last August, the present action means 180% in less than a year. In addition, as further evidence of the success of the company and its product, the directors have been regularly declaring 5% cash dividends each month.

The company's growth has been steady, though remarkable. Starting in 1909 with a capital of $100,000, all subscribed, in the following year it was increased to $250,000. The increase to $1,000,000, retaining $500,000 in the treasury, was authorized in June, 1915. The business has developed from a production of a few hundred cars and a small number of dealers to the present production of approximately 18,000 cars a year and a selling organization of 1200 agents.

EXACT RELATIONS DEFINED.

To prevent misunderstanding of the relations of the International Rubber Company and the Colorado Tire and Leather Company, these companies desire it to be known that while the International company is owned by practically the same stockholders as the Colorado company, still they are two separate and distinct organizations. The Colorado Tire and Leather Company continues to manufacture Durable steel-studded treads at its factory at 985 South Broadway, Denver, and the International Rubber Company is producing International rubber half-sole tires at its factory at 5 West Tennessee street, in the same city. The first mentioned is almost entirely a mail order house, while the latter distributes its product chiefly through dealers.

BOSCH WINDOW DISPLAY CONTEST.

Among the large number of photographs submitted in the Bosch window dressing contest there was evidence that

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many Bosch distributors have great ability in arranging window displays. The purpose of the contest was to stimulate distributors in conducting this important branch of their business, the Bosch Magneto Company posting three prizes for the best displays, to create a little rivalry among the contestants.

The awards were announced recently, views of the windows being presented on this page. First prize, $25, went to Frank E. Eddy, who dressed the window for Ballou & Wright, Portland, Ore.; second, $15, to Harry M. Mayer, Inter-Mountain Electric Company, Salt Lake City; third, $10, to A. G. Scott, W. G. Nagel Electric Company, Toledo, O.

The awards were made under the following point system:

	Points
100% clearness of photograph	20
100% cleverness of display	10
100% advertising value	25
100% arrangement	10
100% best advantage of opportunity	5
100% attention compelling value	20
100% presentation of service idea	10

The chief idea behind the contest was to provide opportunity for Bosch distributors to advertise their service ability. The Bosch company supplied complete sets of Bosch service apparatus to assist the contestants in dressing their windows and to call attention to their ability to give service.

PADUCAH DEALERS INCORPORATE.

Articles of incorporation have been filed by the Paducah Auto Dealers Protective Association, which has no capital stock, and the limited indebtedness permitted is only $100. The incorporators were S. E. Foreman, W. R. Katterjohn and S. W. Dodds, all of Paducah, Ky. There will be five directors.

Motor Vehicle Stock Prices Are Soaring.

Sensational and Continued Advance of Prices Are Due to Extraordinary Demand and Profits.

The remarkable demand for motor cars of all kinds and the extraordinary profits accruing to the manufacturers have sent share prices to astonishing heights on the markets, and they are now furnishing unusual sensations to brokers and speculators.

Chevrolet Motor stock is a striking example. During the past six weeks it has risen 100 points. On March 1 it sold at $130, May 1 at $200 and May 18 at $233. This advance is an eloquent commentary upon the volume of business being done among the makers of low priced cars, as well as upon the acumen of the head of the Chevrolet Motor Company, W. C. Durant.

Chevrolet today is earning more than $725,000 a month, and these earnings will increase in greater ratio than production increase owing to resulting reduction in the cost of manufacture per car as the volume grows. Now turning out 360 Chevrolets a day, it is expected that in August the output will be at the rate of 460 daily. On the 1917 planned production of 150,000 cars net profits should total approximately $12,000,000, or $60 a share.

Chandler Motor stock has been another active participant in the recent advances of prices, it having reached a new high level of 98 on May 18. The directors placed the stock on a six per cent. basis in February by declaring a quarterly 1½ per cent. rate. Earnings thus far this year have been running at the rate of approximately 30 per cent. per annum on the $7,000,000 stock outstanding.

General Motors, which has occupied the stellar position in Wall street for some time, is quoted at a level 3½ times its prices of a year ago. Maxwell, a company that was reported to be in poor financial condition two years ago, has had its common shares doubled in value in a year. Studebaker has been returned to a level 150 per cent. higher than at this time last year. Willys-Overland is also selling at 2½ times its price of 12 months ago.

Since the receipt of the German reply, which cleared up the submarine issue, practically all stocks have been influenced for the better. This is shown in the tabulation below.

	May 18	May 5	1915. April 19
Chandler	97½	89	90½
Chevrolet	233	196	178
General Motors	*465	405	405
Maxwell	89¾	73	70¾
Studebaker	141⅞	121	131
White	52	48	49½
Willys-Overland	262½	227	220

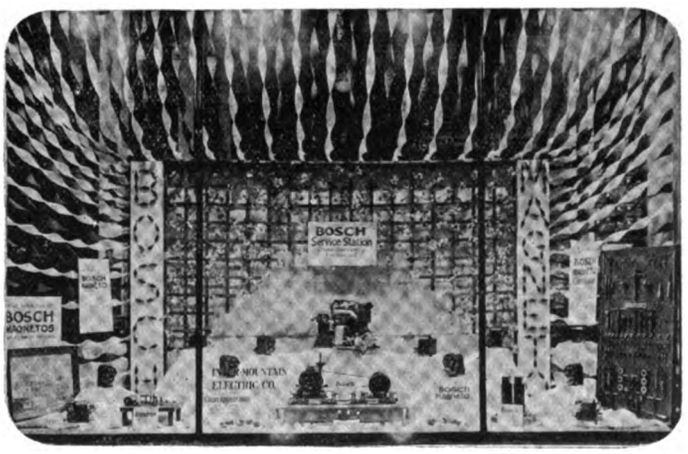
*May 15.

LICKING COUNTY TO ORGANIZE.

Steps are being taken at Newark, O., to organize the Licking County Automobile Trade Association, which will join the state and national associations.

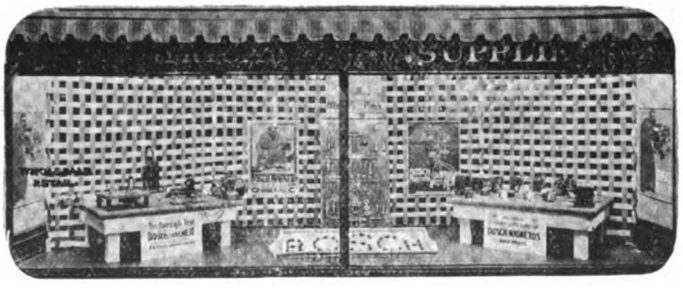
SAXON DECLARES $1.50 DIVIDEND.

The Saxon Motor Car Corporation, Detroit, has declared an initial dividend of $1.50 a share on its $6,000,000 capital stock, payable July 1. It is understood that the dividend rate of six per cent. will be made permanent, and that the company is now earning at the rate of 24 per cent. on its stock.



BOSCH WINNERS.

In These Three Views of the Winning Window Displays in Bosch Magneto Company's National Contest Among Its Distributors Can Be Obtained Valuable Suggestions for Trimming Windows to Secure Effective Arrangement of Accessories—The Black and White Scheme Lends Itself Admirably to Attracting Attention.



WINDOW CONTEST.

The First Prize of $25 Was Awarded to Frank E. Eddy Who Dressed the Window (Shown at Top Left) of Ballou & Wright, Portland, Ore. Second Prize of $15 to Harry M. Mayer, Inter-Mountain Electric Company, Salt Lake City (Top Right); Third to A. G. Scott, W. G. Nagel Electric Company, Toledo, O. (Bottom).

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President H. W. Ford said: "May shipments will exceed the record production of 3405 cars in April. I expect that we will ship about 3800 this month and about 27,000 in the fiscal year ending June 30. Earnings will undoubtedly exceed my estimate of $1,250,000 made last December. From orders on hand I believe the Saxon company will have to produce 50,000 cars in 1917 to meet the demand.

MAKERS GIVE AWAY POLISH.

A comparatively new development in the relations between makers of cars and users, as well as dealers, is evident in the means that many of the leading manufacturers are taking to educate users how to keep the finish of their cars in the best possible condition. In line with this policy is the fact that a score of car makers, including Buick, Winton, Hupmobile, Paige-Detroit, Maxwell, Detroit Electric, Grant, Abbott, Chevrolet, Scripps-Booth, Briscoe, Oldsmobile, Saxon, Empire, Detroiter, H. A. Lozier, Haynes, Inter-State, King, Chalmers and Reo companies now provide a half pint can of O-So-Ezy Cedar Oil polish as part of the standard equipment of the tool kit.

The makers' activities do not end there, however, for they are also encouraging their dealers to educate motorists in the need of a good oil polish after cars have been washed. It is being pointed out that the appearance of cars in the hands of owners is a considerable sales asset in the campaign of dealer and manufacturer alike.

This also can be taken as an exceedingly valuable indorsement of O-So-Ezy polish, inasmuch as a manufacturer would not recommend an article of the kind unless it was best suited for the purpose intended. The O-So-Ezy polish is being used widely and in large quantities, and under the plan outlined above is certain to become a standard product throughout motordom.

The manufacturer, the O-So-Ezy Products Company, 264 Jefferson avenue, East, Detroit, Mich., is now conducting an energetic sales and advertising campaign in all parts of the country.

PREDICTS REDUCTION OF MAKERS.

The Puritan Machine Company, Detroit, which makes and sells parts for 101 different orphan cars, believes that conditions are to bring about a big reduction in the number of motor car makers. There are now 130, but ultimately the number will be about 40, in the opinion of the company.

The growing tendency toward concentration, which is observable in all industries, is affecting the motor car manufacturers. For the pushing of retail sales the strong companies and the strong dealers have got together.

Parts makers discover that as the number of makers to whom the parts are sold become smaller and the share of his output taken by each customer becomes larger, the position of the buyer of parts becomes stronger.

New Angle to Rim Patent Fight.

Earl G. Baker, President of the Universal Rim Company of Chicago Attacks Perlman Patents.

The patent situation with regard to demountable rims, which was thought settled by the injunction against the Standard Welding Company and the beginning of manufacture by the Perlman Rim Corporation, has been stirred up again by suits brought against the Perlman factories by Earl G. Baker, president of the Universal Rim Company of Chicago, who has 12 patents, most of which are said to antedate the Perlman patents, covering various features for demountable rims.

These patents were issued to Joseph Anglada, Earl Baker and his attorney, Charles G. Hawley. The case is brought in the United States court for the eastern district of Michigan and the defendant is the Jackson Rim Company, Jackson, Mich., which was recently purchased by the Perlman Rim Corporation.

It is also announced that the Standard Welding Company having satisfied itself that negotiations were useless with the Perlman company, has prepared to put on the market a rim of new design which it will seek to have adopted instead of its old rim. The company has been advised that this in no way infringes the Perlman patents and to show its good faith it has submitted drawings of the rim to the Perlman company.

OVERLAND DEALER HELPS.

Dealer co-operation has been developed to an exceedingly high degree by the Willys-Overland Company. It designs special advertisements for dealers and supplies electros of them. The company believes that local newspaper advertising will make the dealer's business better known by connecting his name with the national Overland campaign. Last month about 1000 electros were sent out by the company. Among the other dealer helps are "silent salesmen" display stands, which are reproductions of the Overland and the Willys-Knight radiator medallions in their true colors. The sign is equipped with electric light bulb and automatic flasher for night display. The company also supplies an attractive rack in which to keep Overland catalogues so that the prospects will be tempted to look them over.

SECOND-HAND CAR TRADE.

A dealer in motor vehicles who makes a practise of taking old machines as part payment for new is not a second-hand dealer within the meaning of the law, which provides for reports of all purchases by second-hand men to police department every 24 hours in Boston, Mass. This is the judgment rendered by Judge Burke of Boston in the case of two motorcycle dealers charged by the police with violation of the second-hand law.

The judge held that if the principal business of a dealer was trade in used cars or motorcycles, he would require a second-hand man's license. If, however, he accepted used machines in part payment for new, and this was merely incidental to his larger business of dealing in new motor vehicles, a license was not required.

In another case before Judge Burke, the defendant in which admitted that he bought and sold second-hand tires, sometimes giving old tires in exchange for old tires, the court held that he should have a second-hand man's license to carry on his business. Notice of appeal was entered on this decision.

HUDSON PRICES ARE INCREASED.

Increasing material costs have forced the Hudson Motor Car Company to add $100 to the prices of its open cars, while $250 has been added to the price of two closed car models. The touring car and roadster, which were formerly $1375, are now $1475. The sedan, formerly $1900, is now $2000; the cabriolet, formerly $1675, is now $1775, and the limousine and brougham, formerly $2500, are now $2750.

DES MOINES TRADE LARGE.

That $12,000,000 worth of business in the motor trade is done annually at Des Moines, Ia., is shown in figures compiled recently by the Chamber of Commerce there. This includes car and accessory sales and garage and repair work. The number of concerns in the business is 111. The aggregate capitalization of these companies, $1,900,000, included only those that are incorporated and not firms and partnerships. The size of this business is eloquent testimony to the number of motor cars being purchased by Iowa farmers.

JEFFERY ADDS TWO TRUCKS.

The Thomas B. Jeffery Company, Kenosha, Wis., has added two new truck types to its line. The Jeffery rapid service wagon, with a maximum capacity of 1500 pounds, is a high speed delivery car, with 35 by 4½-inch pneumatic tires all around, unit power plant, electric lighting and starting equipment and spiral bevel gear drive.

The Jeffery all-purpose truck, maximum capacity of 3000 pounds, is, as its name implies, a truck for all around use. It has a unit power plant, internal gear drive, pneumatic front and solid rear tires, Duplex governor and electric lighting and starting equipment.

The chassis prices are $900 and $1400 respectively, and both models are furnished complete with a streamline hood and cowl, fore doors, windshield, driver's seat, etc. The Jeffery Quad is now being made with a larger motor, stronger (trussed) frame and other improvements. There are now more than 3500 trucks of this type in service, the majority of which have been sold within the last two years.

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JOBBERS FAVOR MANY REFORMS.

Several Important Measures Intended to Improve Business Conditions Are Considered.

MANY important measures were initiated by the National Association of Automobile Accessory Jobbers at the annual convention held at Hot Springs, Va., May 11. These cover a wide range of points.

One was the proposal to discourage imitation of non-patentable products by refusing to handle them, so that the manufacturer who has built up a profitable business in such a specialty will be maintained in his enjoyment of an exclusive market.

A committee was appointed to work out plans to aid the dealers in conducting their business more efficiently and with better results. This committee is headed by H. R. Williams of the Gibson Company, Indianapolis, which during the dull months of last year employed the efforts of its salesmen in securing overhauling work for dealers.

A resolution was passed condemning the practise of a manufacturer soliciting or a member giving advertising patronage to a house organ, so assuming the support of a publication in the interests of another house.

The practise of some manufacturers of sending out threatening letters to the trade when a patent is taken out or a patent suit begun was condemned. The convention took the position that no patent was worth anything until the matter had been adjudicated in the courts.

A request was made that manufacturers furnish jobbers with information concerning their new products from between Dec. 1 and 15. It was said that information regarding products is now often not to be had until January or February, when it is late to get it into the jobbers' catalogue.

The question of taking up with the Interstate Commerce Commission and the railroads the matter of designating a definite freight classification for accessories shipments was considered. At present there is no certainty as to the freight rate that a shipper may be asked to pay.

It was decided to organize a credit bureau to furnish the members of the association with information concerning bad accounts. No attempt will be made to investigate applicants for credit, but facts reported to the association will be passed on to members. Three forms for collections will be provided. Form one will be sent by a creditor to debtor telling him that information regarding the account will be turned over to the association in 10 days if it is not paid. Ten days later form two is sent to the association, informing it that the debtor has failed to pay. The association then sends form three to the debtor, urging a settlement, and if it is not made in a short time a bulletin stating the facts is sent to all the members of the association.

Consideration was given a communication from the association of hardware jobbers, protesting that many of its members qualified also as accessory jobbers. The convention ruled that each case must be judged on its individual merits, the standard being the amount of accessory business which the hardware jobber has built up.

It was reported to the convention by Commissioner Webster that the Stevens bill is dead so far as any action by the present Congress is concerned, and that the bill has been so emasculated that it is perhaps best to wait until the next congressional session.

L. C. Reed, an organizer for the Chamber of Commerce of the United States, convinced the organization that it should join the chamber. He said that the American Federation of Labor, with 2,200,000 members, employed from 6000 to 8000 paid officers to take care of its interests, and that the farmers were becoming so organized that they were able to exert some influence over legislation. Business men needed some similar organization for a like purpose and the Chamber of Commerce of the United States, he said, had succeeded in organizing 320,000 of them.

It was decided to employ a paid investigator, who will look into the status of various firms who apply for enrollment as jobbers, and will also probe trade abuses. A resolution was passed against parallels in advertising, or mentioning the name of a competitor in copy.

The practise of giving rebates after purchases of a customer had reached a certain volume was discouraged. It was decided to invest surplus funds of the organization in safe securities and deposit them in a Chicago bank. The practise of accepting collect telegrams from customers was condemned as a form of price cutting. It was decided to cooperate as fully as possible with the Motor and Accessory Manufacturers' organization.

Twenty jobbing and 15 associate members—35 in all—joined the organization at the meeting. Philip H. Lyon of the Chanslor & Lyon Company of San Francisco, was elected a director in place of H. G. McCoy, formerly a member of the same firm, who sold out his interests and has started in business for himself.

Jobbers Approved By N. A. A. A. J.

Business Houses Which Are Recognized By the National Association, Asterisk Indicating Members.

THE JOBBERS' LIST.

This is the list compiled by the National Association of Automobile Accessory Jobbers. Those marked with an asterisk (*) are members of the association. The asterisked names in this list and the list of associate members on the following page constitute the complete membership of the organization.

*Auto Supply Co.....Baltimore
*Andra & Sons Co., Julius....Milwaukee
*Automobile Supply Co.....Detroit
*Automobile Supply Co.....Chicago
*Auto Equipment Co.....Denver
*Automobile Equipment Co.....Detroit
*Auto Supply & Tire Co..Wichita, Kan.
*Auto Supply Co., The..Hutchinson, Kan.
*Alexander-Seewald Co.....Atlanta
American Motor Car Equipment Co., Boston
Alsten & Goulding Co..Worcester, Mass.
Albany Hardware & Iron Co., Albany, N. Y.
Automobile Supply Co.....Tacoma
*Auto Tire Co.....San Diego
Archer-Wiggins Co.....Portland, Ore.

*Bragg & Sons, N. H.....Bangor, Me.
*Becker Auto Supply Co., Grand Rapids, Mich.
*Bowman Co., E. A.....Detroit
*Beers Bros. Co.....Oil City, Pa.
*Brownell Auto Co....Birmingham, Ala.
*Belcher & Loomis Hardware Co., Providence, R. I.
*Burwell-Smith Sup. Co..Oklahoma City
*Burwell Sup. Co., J. B....Oklahoma City
*Beck & Corbitt Iron Co.....St. Louis
*Baughman Co., G. Norman..Tampa, Fla.
*Brownell Co., H. F....Sioux Falls, S. D.
*Ballou & Wright.....Portland, Ore.
*Bonniwell-Calvin Iron Co..Kansas City
*Bindrim, Julius.....Brooklyn, N. Y.
Beckley-Ralston Co.....Chicago
Beckley-Ralston Co.....San Francisco
Blish, Mize & Silliman....Atchison, Kan.
Bailey Co., James.....Portland, Me.
Bigelow & Dowse Co.....Boston
Bingham Co., W.....Cleveland
Bostwick & Braun.....Toledo, O.
Bailey-Lebby Co.....Charleston, S. C.
Barker, Rose & Clinton Co..Elmira, N. Y.
Belknap Hdw. & Mfg. Co....Louisville
Butler Bros.....Chicago

*Cowan & Co., Andrew...Louisville, Ky.
*Cooper Rubber Co., I. J.....Cincinnati
*Campbell Auto Sup. Co., Fred..St. Louis
*Chanslor & Lyon Co.....San Francisco
*C. & D. Auto Sup. Co.....Cincinnati
*Chicago Automobile Supply House, Chicago
*Canadian-Fairbanks Morse Co., Montreal
*Carolinas Auto Supply House, Charlotte, N. C.
*Chemi Co.....Richmond, Va.
*Cummings Bros.....Flint, Mich.
*Campbell-Collins Co.....San Jose, Cal.
*Crump Co., B. T.....Richmond, Va.
Central Rubber & Sup. Co..Indianapolis
Chicago Rubber Co.....Chicago
Central Automobile Sup. Co..Des Moines
Chapman & Brooks....Springfield, Mass.
Collistern Sayle Co.....Cleveland
Child, Day & Churchill Co.....Spokane
Cutten & Foster.....Toronto, Canada
Cameron & Barclay Co..Charleston, S. C.
Campbell Iron Co.....St. Louis
Clark & Son, George A.....Minneapolis
Cleveland Co., L. W.....Portland, Me.

*Dyke Motor Supply Co.....Pittsburg
*Drennen Motor Car Co., Birmingham, Ala.
*Davis-Browne Elec. Co....Ithaca, N. Y.
Darling Auto Co.....Auburn, Me.
Dakota Iron Store.....Sioux Falls, S. D.
Day & Co., E. J.....Oakland, Cal.

*Electric Appliance Co.....Chicago
*Electric Appliance Co.....New Orleans
*Electric Appliance Co....San Francisco
*Electric Appliance Co.....Dallas
*Elyea-Austell Co.....Atlanta

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*Electric Mfg. Co.....St. Paul
*Economy Auto Sup. Co..Newark, N. J.
*Equipment Co.....Kansas City
*Elliot-Lewis Co.....Philadelphia

*Francke & Co., C. D....Charleston, S. C.
*Ferris-Dunlop Auto. Sup. Co.....Dallas
*Fisk Co. of Texas.....Dallas
*Featherstone, E. A.....Los Angeles
Farwell, Ozmun Kirk & Co....St. Paul
Fry, Keyser.....Reading, Pa.

*General Sales Co.....Detroit
*Gibson Co.....Indianapolis
*Gross Hardware Co., Philip..Milwaukee
*Grant, J. D.....Fargo, N. D.
*General Auto Sup. Co....Amarillo, Tex.
*Griswold-Sohl Co.....Columbus, O.
*Goodby-Rankin Co.....Providence, R. I.
*Graham-Selzer Co.....Peoria, Ill.
*Gaul, Derr & Shearer Co..Philadelphia
Gavin-Williams Co.....San Diego
Gray & Dudley Hardware Co..Nashville

*Herring Motor Co.....Des Moines
*Hine-Watt Mfg. Co.....Chicago
*Hawkins Auto Supply Co., G. W.,
Houston, Tex.
*Hippee-Henley Motor Supply Co.,
Des Moines
*Hyslop Bros.....Toronto, Canada
*Hagberg Rubber Co.....Wichita, Kan.
Hagar Hdw. & Paint Co..Burlington, Vt.
Harbison & Gathright Co....Louisville
Hardware Supply Co.....Akron, O.
Hearsey Co., H. T.....Indianapolis
Harwi Hdw. Co., A. J....Atchison, Kan.
Hudson & Thurber Co.....Minneapolis
Hackett, Gates & Hurty.....St. Paul
Horton, Henry.....New Haven, Conn.
Hibbard, Spencer, Bartlett Co...Chicago
Holly-Mason Hardware Co.....Spokane

*Interstate Elec. Co.....New Orleans
*Intermountain Elec Co...Salt Lake City
Iver Johnson Sporting Goods Co.,
Boston
Iver Johnson Sportings Goods Co.,
Fitchburg, Mass.
Iver Johnson Sportings Goods Co.,
Worcester, Mass.
Iroquois Rubber Co.....Buffalo

*Jackson Motor Supply Co.....Pitsburg
*Johnstown Automobile Co.,
Johnstown, Pa.
Janney-Semple-Hill Co.....Minneapolis
Joplin Supply Co.....Joplin, Mo

*Kansas City Auto Sup. Co..Kansas City
*E. D. Kimball & Co.....Chicago
Kimball-Upson Co.....Sacramento
Kelly-How-Thompson Co.....Duluth
Keidel & Sons, H. W.....Baltimore
Krakauer, Zork, Moyes Co..El Paso, Tex.

*Lowe Motor Supply Co.....New York
*Louisville Auto Supply Co....Louisville
*Lansing Hardware Co.....Scranton, Pa.
*Lathan Auto Supply Co....San Francisco
Lee Hardware Co.....Salina, Kan.
Linscott Supply Co.....Boston
Lockwood-Luetkemeyer-Henry Co.,
Cleveland
Logan & Gregg Hdw. Co.....Pittsburg

*M & M Co.....Cleveland
*Missouri Auto Spec. Co.....St. Louis
*Morley-Murphy Hardware Co.,
Green Bay, Wis.
*Manufacturers Supplies Co..Philadelphia
*Minneapolis Iron Store Co..Minneapolis
*Motor Car Sup. Co.....Chicago
*Motor & Machinists Supply Co.,
Kansas City
*Mersick & Co., C. S....New Haven, Conn.
*McCullough & Son, J. B....Philadelphia
*Millen & Son, Ltd., John,
Montreal, Canada
*Miller Bros. Auto & Sup. House,
Washington, D. C.
*Motor Car Sup. Co.....Calgary, Canada
*McCoy Motor Sup. Co....San Francisco
Morley Bros.....Saginaw, Mich.
Marshall-Wells Hdw. Co.....Duluth
Motor Car Equipment Co.....Boston
Motor Car Equipment Co..Newark, N. J.
Motor Car Equipment Co.....New York
Marshall-Wells Hdw. Co..Portland, Ore.
Marshall-Wells Hdw. Co.....Seattle
Marshall-Wells Hdw. Co.....Spokane
Martin-Evans Co.....Brooklyn, N. Y.
Marshall Co., A. H..Plattsburgh, N. Y.
Meyers Hdw. Co., M. P.,
Plattsburgh, N. Y.
McRae & Co., H. A....Glens Falls, N. Y.
Meyer Co., Joseph F.....Houston, Tex.
Miller & Co., George C....Philadelphia
Mohrig Bros.....San Francisco

*National Elec. Supply Co.,
Washington, D. C.
*Nebraska-Buick Auto Co.,
Lincoln, Neb.
*Nicols, Dean & Gregg.....St. Paul
*National Electric & Auto Supply Co.,
Peoria, Ill.
Norris & Co., R. W.....Baltimore
Northwestern Auto Supply Co.,
Billings, Mont.
Nock Co., George W.....Philadelphia

*Osburn Automobile Sup. Co....Memphis
*Ohio Rubber Co.....Cincinnati
*Orr Iron Co.....Evansville, Ind.
Omaha Rubber Co.....Omaha
Olmstead Co., The.....Syracuse

*Pennsylvania Rubber & Sup. Co.,
Cleveland
*Picard & Co., A. J.....New York
*Pruden Hdw. Co., W. E.....New York
*Pittsburg Auto Equipment Co.,
Pittsburg
*Phoenix Auto Sup. Co.....St. Louis
*Powell Sup. Co.....Omaha
*Piedmont Hdw. Co.....Danville, Va.
Post & Lester.....Hartford
Post & Lester.....Boston
Paxton & Gallagher Co.....Omaha
Paxton & Gallagher Co....Auburn, Neb.
Paxton & Gallagher Co..Deadwood, S. D.
Paxton & Gallagher Co..Cheyenne, Wyo.
Pittsburg Rubber Co.....Pittsburg
Pritzlaff Hdw. Co., John.....Milwaukee
Peden Iron & Steel Co....Houston, Tex.
Peden Iron & Steel Co.,
San Antonio, Tex.
Pacific Hdw. & Steel Co..San Francisco

Quinn & McGill Motor Supply Co.,
Denver

*Roehm & Davison.....Detroit
*Roberts-Toledo Auto Co.....Toledo
*Reinhard Bros. Co.....Minneapolis
*Reid Motor Co.....Quincy, Ill.
*Ricard Co., Jay A....Schenectady, N. Y.
*Roberts Elec. Sup. Co., H. C...Philadelphia
*Rubel & Co., Charles..Washington, D. C.
Rice & Dayton Mfg. Co.,
Cedar Falls, Iowa
Richards & Conover Hdw. Co.,
Kansas City
Richards & Conover Hdw. Co.,
Oklahoma City
Remick Co., James S.....Sacramento
Rice & Miller.....Bangor, Me.
Rose-Lyon Hdw. Co..Little Rock, Ark.

*Seig Iron Co.....Davenport, Iowa
*Shuler Rubber & Supply Co.,
New Orleans
*Southern Auto Sup. Co....Chattanooga
*Sommers & Co., G.....St. Paul
*Smith & Co., C. J.....St. Paul
*Schroyer & Co., G. W.....Dayton
*Spencer-Carroll Co.....Waco, Tex.
*Shadbolt & Boyd Iron Co....Milwaukee
Sherwood-Hall Co..Grand Rapids, Mich.
Southwick Auto Sup. Co.....Topeka
Sligo Iron Store Co.....St. Louis
Stanbaugh-Thompson Co.,
Youngstown, O.
Strauss & Co., Joseph.....Buffalo
Salt Lake Hdw. Co.....Salt Lake City
Saginaw Hdw. Co.....Saginaw, Mich.
Severin Tire & Sup. Co..Oklahoma City
Shattuck-George Iron Co..Wichita, Kan.
Shapleigh Hdw. Co.....St. Louis
Simmons Hdw. Co.....St. Louis
Spokane Cycle & Sup. Co.....Spokane
Sickles Saddlery Co.....St. Louis
Standard Tire & Rubber Co.....Boston
Standart Bros.....Detroit
Syracuse Rubber Co.....Syracuse

*Toledo Rubber Co.....Toledo
*Tarbell-Watters Co...Springfield, Mass.
*Toewater & Co., G. M.....Cincinnati
*Talman Auto Sup. Co....Richmond, Va.
*Tri-State Motor Co.....El Paso
*Tisch Auto Supply Co.,
Grand Rapids, Mich.
Thompson Hdw. Co., W. A. L.,
Topeka, Kan.
Tenk Hdw. Co.....Quincy, Ill.
Townsley Metal & Hdw. Co..Kansas City
Thompson-Reilly Co.....Newark, N. J.
Thompson, H. D.....Malone, N. Y.
Walter Tips Co.....Austin, Tex.
Tracy-Wells Hdw. Co.....Columbus, O.

*Union Supply Co.....Toledo, O.
U. S. Rubber Co.....Rochester
U. S. Rubber Co.....Syracuse
U. S. Auto Sup. Co.....Omaha
Utica Cycle Co.....Utica, N. Y.
Union Hdw. & Metal Co....Los Angeles

*Van Benschoten, John,
Poughkeepsie, N. Y.
*Van Camp Hdw. & Iron Co..Indianapolis

*Weinstock-Nichols Co.....San Francisco
*Western Motor Sup. Co.....Minneapolis
*Wetmore-Savage Co.....Boston
*Western Automobile Sup. Co....Omaha
*Warner Co., Roy E.....Louisville
*Woodwell Co., Joseph.....Pittsburg
*Warnock Co., William..Sioux City, Iowa
*Western Rubber & Sup. Co..Los Angeles
*Wheeler & Sheerin.....Indianapolis
Wagner Hdw. Co.....Mansfield, O.
Waterhouse-Lester Co.....Los Angeles
Waterhouse-Lester Co.....Oakland
Waterhouse-Lester Co....San Francisco
Williams Hdw. Co.....Minneapolis
Wyeth Hdw. Co.....St. Joseph
Wesco Supply Co.....St. Louis
Worthington Co., George.....Cleveland
Waite Auto Sup. Co....Providence, R. I.
Western Motor Sup. Co.....El Paso
Wright & Wilhelmy Co.....Omaha
Whittemore-Simms Co.....New York
Western Motor Sup. Co.....Milwaukee
Western Electric Co.....Chicago
Wood, Vallance & Co.....Winnipeg, Can.
Wood, Vallance & Co.....Hamilton, Can.
Wood, Vallance & Co.....Alberta, Can.
Wood Auto Supply Co.....Utica

Associate Members.

Manufacturers Who Have Affiliated with the Jobbers in the N. A. A. A. J.

American Bronze Co.....Berwyn, Pa.
Atlas Auto Supply Co.....Chicago
Auto Parts Co.....Providence, R. I.
Advance Felt & Cutting Co.....Chicago
Atlas Specialty Mfg. Co.....Chicago
Au-To Compressor Co....Wilmington, O.
Automobile Sup. Mfg. Co..Brooklyn, N. Y.
Auto Parts Mfg. Co.....Milwaukee
American Lava Co....Chattanooga, Tenn.
Adamson Mfg. Co.....East Palestine, O.
American Ever Ready Works,
Long Island City, N. Y.
Atwater Kent Mfg. Works..Philadelphia

Brunner Mfg. Co.....Utica, N. Y.
Brown Spring Oiler Co.....Cleveland
Browne & Caine.....Chicago
Benford Mfg. Co.....Mt. Vernon, N. Y.
Bigsby-Rotary Mfg. Co.....Cleveland
B. & L. Auto Lamp Co.....New York

Champion Spark Plug Co.....Toledo
Crum Mfg. Co.....Ottawa, Kan.
Crescent Tool Co.....Jamestown, N. Y.
Curtis Pneumatic Mchy. Co.....St. Louis
Central Brass & Fixture Co.,
Springfield, O.
Chicago Fuse Mfg. Co.....Chicago
C. & E. Mfg. Co.....Marshalltown, Iowa

Davies-Young Soap Co.....Dayton
Double Fabric Tire Co.....Auburn, Ind.
Durkee-Atwood Co.....Minneapolis

Edelman & Co., E.....Chicago
Edmunds & Jones Mfg. Co.....Detroit
Endurance Tire & Rubber Co.,
New Brunswick, N. J.

Findeisen & Kropf Mfg. Co.....Chicago
Federal Rubber Mfg. Co.....Milwaukee
Federal Miniature Lamp Div. of General
Electric Co.....Chicago
Firestone Tire & Rubber Co.....Chicago
Fitzgerald Mfg. Co....Torrington, Conn.
Fulton Co., The.....Milwaukee

Gemco Mfg. Co.....Milwaukee
Globe Machine & Stamping Co..Cleveland

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Grossman Mfg. Co., Emil..Brooklyn, N. Y.
Gray & Davis, Inc.....Boston
Gearless Differential Co.....Detroit
General Tire & Rubber Co.....Akron
Gordon Co., J. P.....Columbus

Hartford Suspension Co.....Jersey City
Herz & Co.....New York
Hayes Mfg. Co.....Detroit
Harvey Spring & Forging Co.,
Racine, Wis.

Illinois Brass Mfg. Co.....Chicago
Indiana Lamp Co.....Connersville, Ind.
Ideal Sheet Metal Works.....Chicago

Judd & Leland Mfg. Co.,
Clifton Springs, N. Y.
Johns-Manville Co., H. W.....New York
Jiffy-Jack Co.....Cleveland

Kellogg Mfg. Co.....Rochester
K. W. Ignition Co.....Cleveland
Keyless Auto Clock Co.....New York

Lovell-McConnell Mfg. Co..Newark, N. J.
Laminated Shim Co.....New York

McQuay-Norris Mfg. Co.....St. Louis
Metal Spec. Mfg. Co.....Chicago
Mosler & Co., A. R....Mt. Vernon, N. Y.
Milwaukee Auto Eng. & Sup. Co.,
Milwaukee
Mossberg Co., Frank....Attleboro, Mass.
Metal Stamping Co....Long Island, N. Y.
McGraw Tire & Rubber Co.,
East Palestine, O.
Motometer Co.....New York
Manhattan Electrical Supply Co.,
New York
Manhattan Electrical Supply Co.,
Chicago
Manzel Bros. Co.....Buffalo
Marvel Mist Mfg. Co....Brooklyn, N. Y.
Midland Supply Co.....Davenport, Iowa
Mayo Mfg. Co.....Chicago

Northwestern Chemical Co...Marietta, O.
Nungesser Carbon & Battery Co.,
Cleveland

New Era Spring & Spec. Co.....Detroit
Nelson Mfg. Co., A.....Chicago
Niehoff & Co., Paul G.....Chicago
National Motor Sup. Co.....Cleveland
National Standard Co.....Niles, Mich.

Oakes Co., The.....Indianapolis

Perkins-Campbell Co.....Cincinnati
Premier Elec. Co.....Chicago
Pull-U-Out Sales Co.....St. Louis
Peoria Overhead Washer Co..Peoria, Ill.
Piel Co., G.....Long Island City, N. Y.

Romort Mfg. Co.....Seattle
Royal Equipment Co.....Bridgeport
Reflex Ignition Co.....Cleveland

Sears-Cross Co.....Brooklyn, N. Y.
Silvex Co.....New York
Sparks-Withington Co....Jackson, Mich.
Standard Steel Box Co..Bridgeville, Pa.
Stevens & Co.....New York
Sunderland Mfg. Co.....Chicago
Shaler Co., C. A.....Waupun, Wis.
Sharp Spark Plug Co.....Cleveland
Standard Welding Co.....Cleveland

Temco Electric Motor Co.....Leipsic
Tuthill Spring Co.....Chicago
Tingley & Co., Charles O...Rahway, N. J.
Thermoid Rubber Co.....Trenton, N. J.

U. S. Light & Heat Corp.,
Niagara Falls, N. Y.

V-Ray Co.....Marshalltown, Iowa
Victor Rubber Co.....Springfield, O.
Victor Lamp Co.....Cincinnati
Voorhees Rubber Co.....Jersey City

Walden Mfg. Co.....Worcester, Mass.
Walker Mfg. Co.....Racine, Wis.
Weaver Mfg. Co.....Springfield, Ill.
Wheeler & Schebler.....Indianapolis

Sales Increased 6000 Per Cent.

Motor Industry Nows Ranks as the Third Largest—Its Growth in 12 Years.

In 12 years the automobile industry has grown to be the third largest manufacturing business in the United States, being exceeded in the value of its product only by the steel makers and the producers of clothing, according to A. E. Cooper, who makes an interesting analysis in the Financial World.

In 1915 the amount spent for motor cars reached the enormous sum of $723,000,000, as compared with $12,000,000 in 1903. This is an increase of 6000 per cent. The 1915 figure is greater than the combined gross business of the following railroads: Pennsylvania, Atchison, Southern Pacific, St. Paul, Baltimore & Ohio and Union Pacific, the six largest systems in the country.

In 1915 the number of motor cars produced is set at 892,618—in 1903 it was 11,000. Against an increase of 6000 per cent. in value there was an increase of 8000 per cent. in the number produced. In 1907 the average price was $2123 and in 1915 it was $811.

This does not mean that the higher and medium priced machines may not develop in a constantly broadening market, but that if the ratio of one car to every 48 people in the United States is to be reduced it must be done by the low priced cars.

During 1915 approximately $30,000,000 was spent in factory additions and new equipment in order to make possible for 1916 an output of 1,200,000 cars. These cars are averaging about $750 in price. Statistics of the industry during its development are as follows:

Year	Number of Cars	Total Value	Aver. Price
1899....	3,700	$4,750,000	$1,284
1903....	11,000	12,650,000	1,150
1904....	21,700	30,000,000	1,382
1905....	25,000	40,000,000	1,600
1906....	34,000	62,900,000	1,850
1907....	44,000	93,400,000	2,123
1908....	85,000	137,800,000	1,602
1909....	126,500	164,200,000	1,298
1910....	187,000	225,000,000	1,203
1911....	210,000	226,500,000	1,250
1912....	378,000	378,000,000	1,000
1913....	485,000	425,000,000	878
1914....	515,000	490,000,000	942
1915....	892,000	723,000,000	811
1916....1,200,000*		900,000,000*	*750

*Estimated.

The writer points out that last year the Willys-Overland Company sold 95,000 cars, but that this year because of the addition of a low priced car the output will be 200,000. As a matter of fact the company is now turning out about 1000 a day. Last year net earnings amounted to 55 per cent. on the common stock.

The growth of the Saxon Motor Car Company is pointed out as remarkable. This company, with cars at $395 and $785, makes the lowest priced models in both the four and six-cylinder fields, and since its organization in 1913 has risen to ninth place among the 448 makers in the country. Last year it earned $20 a share on its common stock. The Ford and Chevrolet companies are other examples of makers of low priced cars whose progress has been remarkable. This indicates that the largest business possibilities exist for companies making cars of the lowest price.

HASSLER REPORTS BIG BUSINESS.

Though the Robert H. Hassler, Inc., has been marketing its shock absorber only during the past three years, the company is now shipping car load lots to the Pacific Coast, Chicago, Kansas City and Des Moines, and now ranks among the leading producers of this kind of motor car equipment. The 1916 production is scheduled at 100,000 sets. When the first Hassler shock absorber, which was the first lever constructed type ever built for Ford cars, was placed on the market in the fall of 1913, the vertical type of shock absorber was just beginning to sell readily. Since then the Hassler device has become the most popular type.

The first Hassler shock absorber had a flat stock, cylinder shape spring, and sold at $30. In the spring of 1915 the company produced a model with a round stock, cone shape spring, and it is this model that has swept the country and is now for sale by more Ford dealers and distributors than any other shock absorber being manufactured, according to the Hassler company's recent statement. The first Hassler type has been improved in the 1915 model, in that the absorber is prevented from striking the fender iron in the front or the body in the rear.

The company has developed a means of distribution which enables it to do business more expeditiously and satisfactorily to itself than by the usual methods. The company appoints exclusive distributors in limited territories and does not sell to jobbers. The eastern representatives are the L. M. Cotton, Inc., 922 Commonwealth avenue, Boston, exclusive distributor for New England, and the Hassler Sales Company, 502 Essex building, Newark, N. J., whose territory is New York and New Jersey.

Robert H. Hassler is owner of the three board, basic patents that have been granted to cover the Hassler shock absorber.

CENSUS OF DEALER PROSPERITY.

To determine the prosperity of its various dealers in all parts of the country and get information on the general condition of the automobile industry, the Westcott Motor Car Company has recently collected data from all its distributors.

It has discovered that many dealers, some of whom handle the Westcott car exclusively, or combine with electric cars or trucks, have been expanding their business so rapidly that large additions to their buildings have become necessary.

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WHAT MANUFACTURERS ARE DOING.

The General Tenor of Reports This Month Shows that the Volume of Business Is Steadily Increasing.

The Reeps Manufacturing Company, 50 Church street, New York City, has incorporated with a capital stock of $25,000. The company is the inventor and manufacturer of the Reeps dashboard oil and gasoline gauges, the Reeps warning signal for bicycles and motorcycles and several electrical and automobile appliances. The company is open to manufacture and make sales arrangement for automobile and electrical devices or act as manufacturers' representatives for any similar line. Mr. Charles S. Shurman, who for several years sold Klaxon and Newtone horns throughout the country, is president and treasurer of the company.

The Ahlberg Bearing Company, 2636 Michigan avenue, Chicago, Ill., has expanded and announces the opening of two new factory branches on the coast, located at San Francisco and Portland, and the installation of an auxiliary regrinding plant at Los Angeles.

The Beckley-Ralston Company, Chicago, Ill., one of the largest automobile accessory jobbers in the country, placed an order with the Champion Ignition Company for 300,000 A. C. spark plugs to be delivered as fast as they could be shipped. This plug is used as equipment by 59 automobile truck and motor manufacturers.

The Puritan Machine Company, Detroit, Mich., announces the recent acquisition of the Keeton Motors, Ltd., whose factory is located in Brantford, Ont. The company has purchased the stock of parts, blue prints, drawings, jigs, dies and tools, and will continue service to Keeton car owners from the main plant in Detroit. This purchase now brings the total of "orphan" motor car companies absorbed by the Puritan up to 101.

The Splitdorf Electrical Company, Newark, N. J., has closed a contract with the Hupp Motor Car Corporation for its magneto requirements for 1917 on all automobiles for export. The model which Hupp will use will be the Dixie Forty Magneto.

The Haynes Automobile Company, Kokomo, Ind., is completing the fifth addition to its plant within the present fiscal year. The new structure will house the production of the "light twelve" car.

The Allen Motor Company, Fostoria, O., has put the eight-hour working day plan into effect at the Bucyrus plant, which has been operating on a 10-hour day basis. This plant has been working 24 hours for some time and has not as yet been able to keep up with the demand for the popular Allen $795 car.

The Lefever Arms Company, Syracuse, N. Y., will be known hereafter as the Durston Gear Company and has placed a contract for a large addition to its plant to take care of additional production requirements. The building will be 41 by 144 feet and will be devoted entirely to the manufacture of transmission and transmission gears. Another building, 60 by 75 feet, has been started, which together wth the other, will take care of the increasing business and provide facilities for still further expansion.

The Wisconsin Auto Top Company, Racine, Wis., which manufactures Badger seat covers, has arranged to increase its output from 175 sets per day to 350, by occupying an additional factory adjoining the present plant. The new building is 40 by 122 and four stories high.

The William Shakespeare Company, Kalamazoo, Mich., has added six new machine tools to its equipment and is planning to increase its production of carburetors. The output is to be running at the rate of 20,000 yearly by the first of July.

The Morton Brake Company, 45 10th street, S., Minneapolis, Minn., has begun the manufacture of the Morton four-wheel brake, whose power is applied by foot pedal pressure.

The I. B. Rowell Manufacturing Company, Waukesha, Wis., which has devoted its attention for many years to the manufacture of farm implements, has taken several large contracts to manufacture automobile devices for patentees who do not desire to establish works of their own. One order is for 60,000 self-starting devices for motor cars, to sell at $35 each, and another order is for a large production of road surfaces and other light road machinery.

The National Weighing Apparatus Company, 917 Third street, Milwaukee, Wis., has taken new and larger quarters, consisting of the former plant of the Milwaukee Separator Company, at 267-273 Sixth street. The officers of the company are: President, John Malenscheck; vice president, John Dobnik; secretary and treasurer, J. L. Malenscheck.

The Knepper-Knight Company, Detroit, Mich., has changed its name to the Knight Company, the latter organization having taken over all the interests of H. H. Knepper. The company distributes Soss hinges, Eaco horns, Inland piston rings and Boston gasoline gauges.

The Mid-Continent Tire Manufacturing Company has purchased a site at 13th and Washington streets, Wichita, Kan., and will erect a factory building, which with equipment will cost $150,000.

The C. D. Manufacturing Company, Marietta, O., will be incorporated with $100,000 capital by F. A. Caskey and others to manufacture automobile accessories. Temporary factory operations will be carried on in the plant of the Galvin Manufacturing Company.

The Juno Motor Truck Company, Juneau, Wis., which has been idle for more than a year, has been turned into a milk condensery. The company was organized about four years ago to take over the business of the Brodesser Motor Truck Company, Milwaukee.

The Hawkeye Manufacturing and Repair Company, Sioux City, Ia., has brought out a 1¼-ton truck designated as model H, the chassis price of which is $1250. A 36-horsepower, four-cylinder, block, valve in the head motor is used. Other features are Stewart Warner vacuum feed, Eisemann magneto, three-speed gearset mounted in unit with the motor, multiple disc, dry plate clutch and semi-elliptic springs.

The Briscoe Motor Corporation, Jackson, Mich., has raised its prices $40 on the 4-24 to $625; $35 to $785 on the 4-38, and $35 to $985 on the eight-cylinder model.

The Sears-Cross Company, Brooklyn, N. Y., has reduced the prices of its speedometers. Model F-15, for Ford, has been reduced from $12 to $8; model FF-16, also for Fords, from $15 to $10; the F. C. M. B. model from $25 to $12.

Two Drive Away Events Were Recently Staged at the Inter-State Motor Company's Plant at Muncie, Ind., Within 30 Days of Each Other—This View Shows a Group of Illinois Inter-State Dealers Who, Headed by Rudolph Isch, Peoria and Chicago, Attended the Second Event—President F. C. Ball Addressed the Gathering, Saying That This Year It Is Not so Much a Question of Selling Cars as Getting Them from the Factories.

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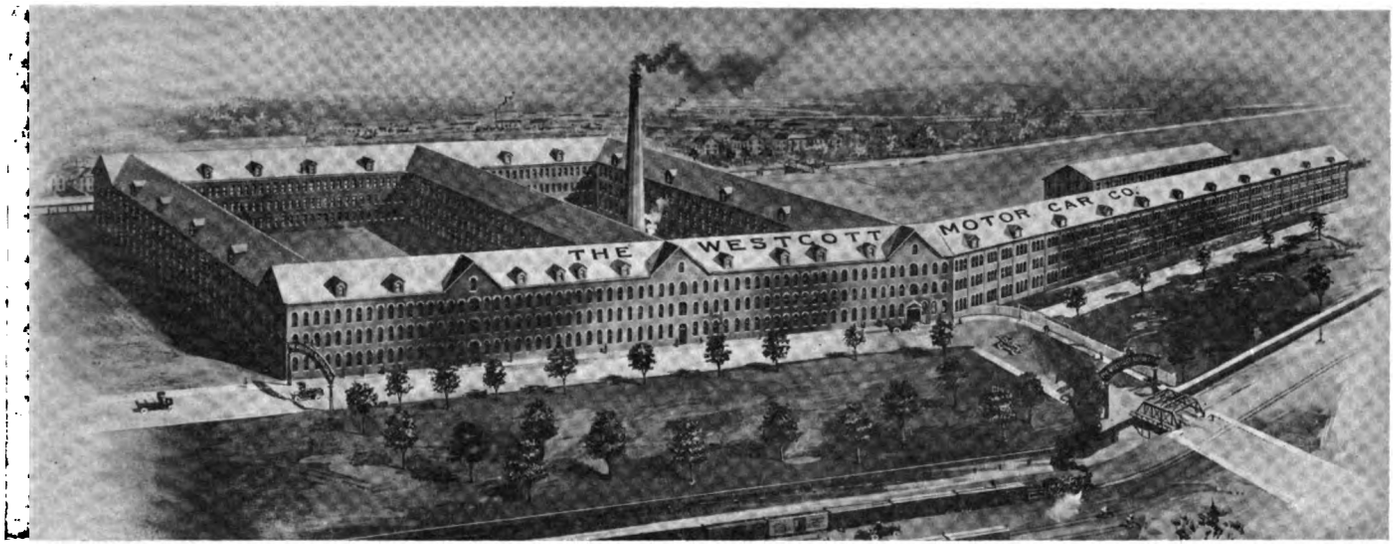

The New Home of the Westcott Motor Car Company, Richmond, Ind., Which the Company Will Occupy About July 1—This Plant, Formerly Occupied by the Buckeye Division of the American Seeding Machine Company, Affords the Westcott Company Facilities to Double Its Production of Cars.

The Argo Motor Company, Inc., Jackson, Mich., announces that on account of the high cost of materials and improvements in construction of the Argo cars, the company has been forced to increase the price of each model $20. The price of the touring car selling at $435 will be $455, and the roadster from $385 to $405.

The Eisemann Magneto Company has discontinued the New York office, the Auto Electric Service Company taking over the stock, machines, etc. The latter company continues at the same address, 245 West 55th street, New York, and acts as the Eisemann service station for New York City proper, also Long Island City, Bronx and Westchester and Rockland counties in New York state, and Bergen, Hudson, Essex and Union counties in New Jersey. The owners of the Auto Electric Service Company are Henry Berlinghof, for the past three years service manager of the Eisemann Magneto Company, and George Strasser, for the past 10 years foreman of the Eisemann repair department. William D. Clowes is now the service manager of the Eisemann Magneto Company, he having succeeded Mr. Berlinghof.

The Hurlburt Motor Truck Company, New York City, has increased its capital from $150,000 to $450,000. Of the new amount $350,000 will be preferred stock, paying dividends semi-annually beginning Oct. 1, 1916, at the rate of seven per cent. per annum. The balance will continue as common stock. The company expects to increase its present production materially. Production now ranges from 600 to 1000 cars a year.

The Hoosier Castings Company, Connersville, Ind., has increased its capital stock to $100,000 and has commenced the construction of a new wing to its factory, which will be 300 by 75 feet. The additional structure will give the company capacity for three times its former output.

The Nordyke & Marmon Company, Indianapolis, Ind., has published an information book dealing with the Marmon 34. The book is divided into two parts, the first covering the obvious external conditions and the second giving a detailed description of all the mechanism, with full instructions for adjustment, lubrication and repairs.

The Sterling Motor Truck Company, Chicago, Ill., has moved into its more commodious quarters at 1324-26 South Michigan avenue, the "automobile row" of the Windy City, where its sales rooms and service station will be conducted. All five sizes of the company's trucks can be displayed in the new show room, which is 60 by 180 feet in dimensions.

The Detroit Seamless Tube Company, Detroit, Mich., has bought 12 acres of ground at Fort and Waterman streets, on which a new plant is to be erected. About 2000 men will be employed, enabling the output of the company's steel tubing to be largely increased.

The Beaver Mills Company, North Adams, Mass., has been incorporated with a capital stock of $500,000. The company will manufacture fabric for automobile tires. The officers of the company are: President, G. F. Higgins; vice presidents, Charles M. Sears and Henry T. Dresser. The directorate includes these officers and William M. Butler and George D. Gregory.

The Hill Pump Valve Company, manufacturer of Utility wrenches, pumps and heaters, has moved into its new factory at Archer avenue, Canal and 23rd streets, Chicago, Ill., where there is more than 14,000 square feet of floor space. This is the third time the company has been compelled by the rapid growth of business to locate in larger quarters.

The Duplex Engine Governor Company, New York, N. Y., has removed from 245 West 55th street to 35 Flatbush avenue extension, Brooklyn, N. Y.

The Westcott Motor Car Company, Richmond, Ind., will move to Springfield, O., and will occupy the Buckeye division of the American Seeding Machine Company's plant there. Operations in this plant are expected to start about July 1. The company now employs about 200 men and is turning out about 1000 cars a year. In the new plant the company will have facilities to more than double its output. The Davis Motor Car Company will occupy the Westcott plant at Richmond about July 1.

The Western Tire and Garage Company, Farwell, Tex., will shortly open a plant for the manufacture of automobile tires and rubber accessories. The plant will give employment to 500 men. The officers are Judge J. D. Hamlin, president; C. A. Robeson, vice president; M. M. Craig, secretary; C. L. McCallan, treasurer.

The Jackson Motor Shaft Company, Jackson, Mich., will erect a 24 by 100 foot addition in the eastern part of the city, directly adjoining the present structure. The new machinery required will cost nearly $15,000 and give employment to 50 men, making a total of 200. The addition will increase the output 50 per cent.

The Saxon Motor Car Company, Detroit, Mich., has opened a branch assembly plant at Franklin and Beubien streets, which will be devoted to building six-cylinder roadsters. On account of the increased demand for Saxon cars, it was necessary to install assembling machinery and turn it over to manufacturing.

The Willys-Overland Company, Toledo, O., has completed another factory structure at the plant, which adds an additional 500,000 square feet of floor space. The entire plant has an aggregate floor space of 4,486,680 square feet, or 103 acres. The shipments are at present averaging almost 900 cars a day.

The O. A. Zarth Wire Wheel Company, 99 South Water street, Aurora, Ill., will locate in larger quarters. The company recently secured an order from the Cole company of Indianapolis for 100,000 sets and many other smaller orders. The Zarth wheel has several new features, particularly the method of attaching the spokes to the rim. The lock holds the removable wheel to the axle and the spokes are screwed into the rim.

The Boston Artificial Leather Company, New York City, has changed its name to the Zapon Leather Cloth Company. The large increase in automobile business necessitated an increase in ca-

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pacity and a larger working force. The company employs 600 operatives and does a large business in heavy sealing material with the automobile manufacturers.

The Vacuum Oil Company has acquired a tract of 675 acres on the New Jersey shore, below Lincoln Park, on which the company will build a large oil refining plant, with piers, docks, wharves and railroad trackage to cost $3,000,000. The company already has three large plants at Bayonne, N. J., and Rochester, N. Y., but the new plant will be considerably larger.

The Paige-Detroit Motor Car Company, Detroit, Mich., has installed a mechanical conveyor in the plant for the final assembly of cars. This has been an important factor in the speeding up of production, which enables the Paige to show an increase of 300 per cent. over this period of the season of last year. The conveyor is a moving platform several hundred feet long, which operates like an endless chain. Cars in embryo are fastened to this platform and they move along from one group of work men to the next as vital parts of the chassis are attached.

The Standard Motor Parts Company of Newcastle, Ind., has taken over the sale and manufacture of parts for the Stoddard-Dayton, Brush, Columbia and Alden-Sampson cars. On account of the rapid increase of manufacturing operations at the plant of the Maxwell Motor Company in Newcastle, it was impossible for this company to sell parts for orphaned cars.

The Grant Motor Car Corporation, Findlay, O., has purchased eight acres of land at the corner of Coit and Kirby avenues in Cleveland's East end manufacturing district and on the main line of New York Central railroad. This will give the corporation sufficient land to care for present and future manufacturing progress and will permit immediate doubling of production. The new plant is of the latest type of construction, one-story brick and steel, steel sash with maize glass and tile roof. The two-story office building is of fancy brick and highly ornamental, to conform to the character of its exclusive surroundings.

The Hyatt Roller Bearing Company, Detroit, Mich., is putting out an interesting little booklet commemorating the recent mileage contest, which was won by E. P. Slason's old white Buick, with a record of 261,800 miles of travel on Hyatt bearings. All the high cars in the contest are pictured.

The Sunderman Corporation, New York, N. Y., is sending out to dealers an attractive counter display stand which pictures its mouse trap carburetor which is used for Ford cars. The card is lithographed, 10¼ by 12¼, and is to stand on the counter.

The Carter Spark Plug Detector Company, Detroit, Mich., is equipping a new plant which when completed will have a capacity of 300,000 Carter detectors per year.

The Murray Motor Car Company, Pittsburg, Penn., has been organized and is producing a car of eight-cylinder design, seven-passenger capacity and 128-inch wheelbase. W. N. Murray is president and with him are J. W. Pontefract and W. W. Vensel. Fred H. Berger is chief engineer and E. R. Fried, assistant engineer.

The Service Motor Truck Company, Wabash, Ind., has increased its capital stock from $250,000 to $450,000. The capacity of the factory has been practically doubled and another new plant is being planned.

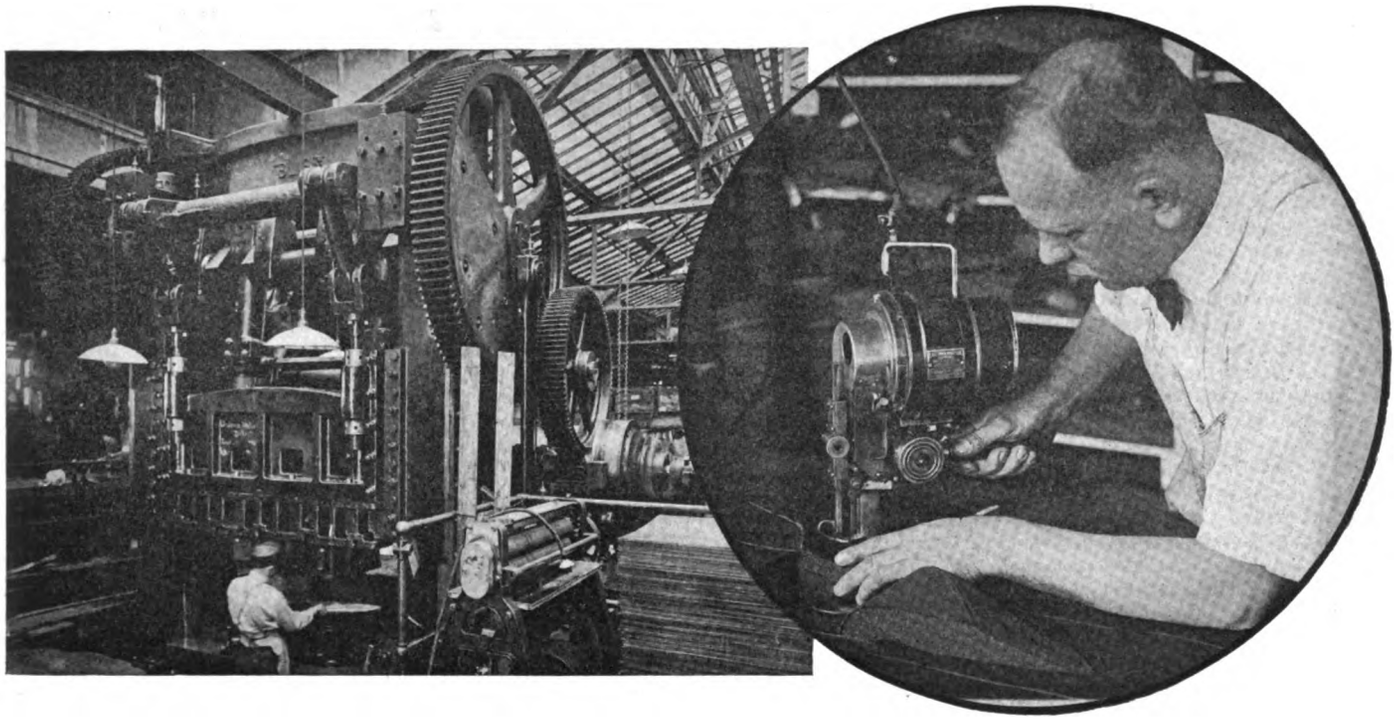
The Duplex Vitalizer Manufacturing Company, Elmira, N. Y., has been formed with a capital stock of $10,000 and is manufacturing a device to regulate the consumption of gasoline in automobiles. S. A. Pulford is president; J. T. Hawley, vice president, and Clayton Hulsander, secretary and treasurer.

The Chalmers Motor Company, Detroit, Mich., is erecting a four-story building, 400 by 60 feet, at a cost of $150,000. It will have a wing 60 by 50 feet and with the recently completed service station will add 156,000 square feet of floor space. This will give space on the main floor for the factory offices and store rooms and the balance will be devoted to manufacturing. Over $75,000 worth of machinery has been purchased for that purpose.

The Timken Detroit Axle Company, Detroit, Mich., has increased its capital stock from $3,000,000 to $6,000,000. It is now erecting the fourth addition to its plant since March, 1915. This new addition, which is an extension of the main building, will be 163 by 40 feet and four stories in height.

The Mason Tire and Rubber Company, Kent, O., is having additions and improvements made which when completed will afford facilities for the production of 500 casings and tubes daily. The company is a $1,000,000 corporation, manufacturing the Mason hand made tires and occupying a plant which has 65,000 square feet of floor space. The entire property comprises about 16 acres of ground, very advantageously located for manufacture and shipment.

The Burd High Compression Ring Company, Rockford, Ill., announces the removal of the Detroit branch from the quarters it has occupied for more than one year in the David Whitney building to a ground floor location, 578 Woodward avenue, Detroit, Mich.



Two Machines by Which the Chalmers Motor Company Is Enabled to Maintain Its Volume of Production at the Highest Mark —At the Left Is Shown the $90,000 Fender Press Which, Exerting a Pressure of 175 Tons, Presses the Metal Into a Die and Forms a Fender of Surpassing Beauty—At the Right the Electric Knife by Which Chalmers Workmen Cut Top Equipment for 200 Cars in a Single Day.

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How Service Is Provided For 500,000 Cars Every Year.

DURING the past few years marked strides have been taken by the manufacturers of cars and equipment in providing service to the dealers and users of their products. By service is meant that aid which the makers offer to enable users to maintain their machines in perfect condition.

The dealer is a forceful factor in this service arrangement, for generally it is through him that the aid is given to the user, and in this way he can establish exceedingly close relationships with the customers, which in the end serve to increase the volume of his business.

Considered in another way, the service arrangements make it possible for the distributor to obtain adjustments, repairs and replacements of the highest quality at the minimum of cost and delay. This is especially true when the maker has branch service stations located in strategic centres in each sales territory, which makes it possible for any dealer to send his cars or equipment to that station and have repair work done by factory trained workmen.

Among the makers of electrical starting and lighting and ignition equipment, service has been developed to an exceedingly high standard. As an instance of this there is the Splitdorf Electrical Company which maintains 21 service and distributing branches in various parts of the world. This vast organization is necessary because the company's product is used wherever gasoline engines are operated.

In a single decade this company has been developed from a small electrical concern to one of the greatest manufacturers in its field in this country. Starting in a small shop on 158th street, New York City, about 10 years ago, the company now has two large manufacturing plants and employs about 2800 work men and executives in its factories and branches. At about the time the automobile industry began its spectacular growth, the company was moved to Newark, N. J. Its progress was consistent and rapid, and about four years ago negotiations were begun to absorb the Apple Electric Company, another big manufacturer of electrical equipment and located in Dayton, O. The combination of these two companies also included the Sumter Works, Sumter, S. C., which was known as the Sumter Electrical Company.

Volume of Splitdorf Business.

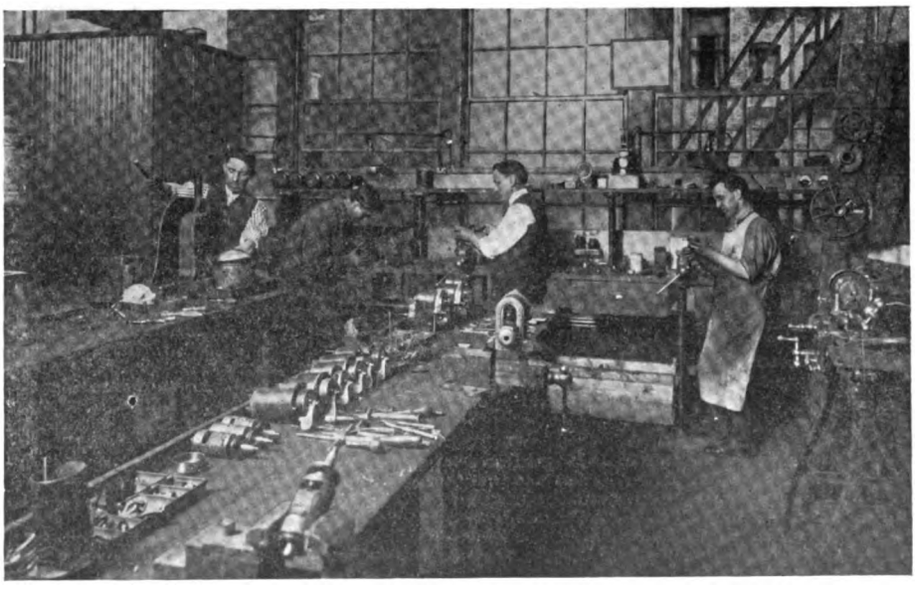
The Splitdorf company is now turning out electrical equipment for more than 35,000 automobiles every month, and the demand is increasing at such a rate that the company has been forced to begin the erection of additions at Newark that will afford 2¾ more acres of floor space. This product includes Dixie magnetos for four, six, eight and 12-cylinder engines, Splitdorf-Apelco starting and lighting systems and Splitdorf Common Sense spark plugs and coils.

Producing electrical equipment for nearly 500,000 motor vehicles annually, naturally requires a vast and highly developed service organization to give adequate co-operation to dealers in that make of equipment. This organization has its ramifications throughout the United States, Canada, Europe and Australia. The American branches are in Boston, New York City, Newark, Philadelphia, Pittsburg, Atlanta, Cincinnati, Kansas City, Chicago, Detroit, Minneapolis, Dallas, San Francisco, Oakland, Los Angeles, Seattle and Toronto. The foreign branches are situated in London, Paris, Milan and Melbourne.

The Splitdorf Electrical Company of Boston is typical of all others. It is both a service and distributing branch, serving the whole of New England, excepting that portion of Connecticut lying west of Hartford, which comes within the jurisdiction of the New York City branch. For the past two years it has been located in its present quarters at 1112 Boylston street, in the Fenway district of Boston, where it is really more accessible than if it were in the heart of the general business section.

With this comparatively large territory to take care of, and especially in view of the large proportion of cars in New England that are provided with Splitdorf equipment in one form or another, the Boston branch is exceedingly busy. During a year's time its work men inspect, adjust and repair the electrical equipment of more than 5000 cars that are brought into the company's garage, while the men in the repair department handle an average of 3500 unmounted magnetos and 5000 coils. Aside from this the branch keeps three men constantly travelling throughout the territory among the garage and repair men to take care of Splitdorf distributing interests. Then, too, there is always an adequate stock of parts and supplies kept on hand for retail sale or for use in the repair departments.

Due to its strategic position and the able direction of its present manager, Robert M. Ellis, this station is one of the most important in the Splitdorf organization. Mr. Ellis has been with the Splitdorf interests for nine years, the last two of which have been spent in Boston as treasurer and manager of the company. He is widely acquainted in the New England automobile trade, having



A Corner of the Special Repair Department of the Splitdorf Company's Branch at Boston, Which Is One of the Most Important of the 21 Branches in Various Sections of the World.

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travelled the territory while engaged in the supply business. It was while thus engaged that he was selected by the

Robert M. Ellis, Manager and Treasurer of the Splitdorf Electrical Company of Boston.

Splitdorf company as export manager of the New York branch, from which he was sent to Boston in 1914.

The plant has been departmentized in a manner that assures prompt and highly satisfactory service. The first or main floor is occupied by the sales room and general offices, the private office of the manager, a general stock room and the repair department. Facing Boylston street is a spacious show window which is fashioned to lend itself to striking displays of Splitdorf products. The basement is taken up by the garage, which has capacity for 10 cars, and is reached either from Massachusetts avenue or Hemingway street.

Boston Branch Completely Equipped.

The branch is completely equipped with facilities to give the same quality of service as could be obtained at the factory, and in much less time for the patrons in its territory. In the sales department a car owner, garage or repair man can purchase complete new Splitdorf ignition and starting and lighting systems, as well as spark plugs, and have them installed immediately by the work men in the repair department. New parts can be obtained from stock or old parts can be restored to perfect working condition without appreciable loss of time. Or if desired the company will loan a customer the parts necessary to keep his car in service while this equipment is being adjusted or repaired. This is a feature that will appeal to all busy car owners and dealers.

The free service offered by the company embraces the work done on systems that are inoperative through defective workmanship or material. Of course a reasonable charge is made for repairing a system that is faulty through abuse by the operator. The free service is in force during the life of the guarantee issued by the Splitdorf company, which is for one year from date of manufacture. The scope of the work done includes every repair and adjustment that may be needed, excepting the rewinding of armatures, which is done at the Newark factory.

When equipment is received either by express or is delivered at the branch, it is dismantled and cleansed of dirt and grease. Then it goes to the special repair department, where it is thoroughly overhauled and restored to perfect working condition. Before it is considered satisfactory it must pass a rigid test by the special testing apparatus shown in one of the accompanying illustrations.

This apparatus is very interesting and is constructed so that it is possible to test both new and old models of Splitdorf and Apple systems. Beneath the table is a variable speed motor which drives a countershaft by belt, and from this countershaft is driven the pulley of a generator test block, of a magneto test block and of a low tension (master) magneto.

The generator block is adjustable to allow for various sizes of sprockets and bases, and the switchboard carries switches to control the circuits to the cutouts and meters for the different types of instruments that may be tested. On this block generators are tested especially for voltage at low speed and for amperage charge rate at all speeds, which is of particular importance. The regulation is taken care of by the three-brush arrangement instead of four, as commonly used on four-pole instruments. The starters are tested for horsepower by the brake test method.

Other Testing Apparatus.

The magneto block is adjustable to compensate for various styles of couplings and special bases used on the different makes of cars equipped with Splitdorf equipment. From one to 12-cylinder magnetos can be tested on this block.

The low tension (master) magneto is used to test all transformers, which are also tried out in connection with a battery to show sparks on four spark plugs mounted on a panel, the gap at the electrodes being about 5/16 of an inch. Low tension magnetos are tested by being connected up with a (master) transformer, showing the sparks on a 12-plug panel.

High-tension magnetos and generators are tested similarly, except that no coil is used. These receive extraordinarily rigid tests, one being for spark to jump a gap of 5/16 of a inch, which is equivalent to about 85 pounds compression with a 1/32 of inch gap at low engine speed. High speed and safety gap tests are also made.

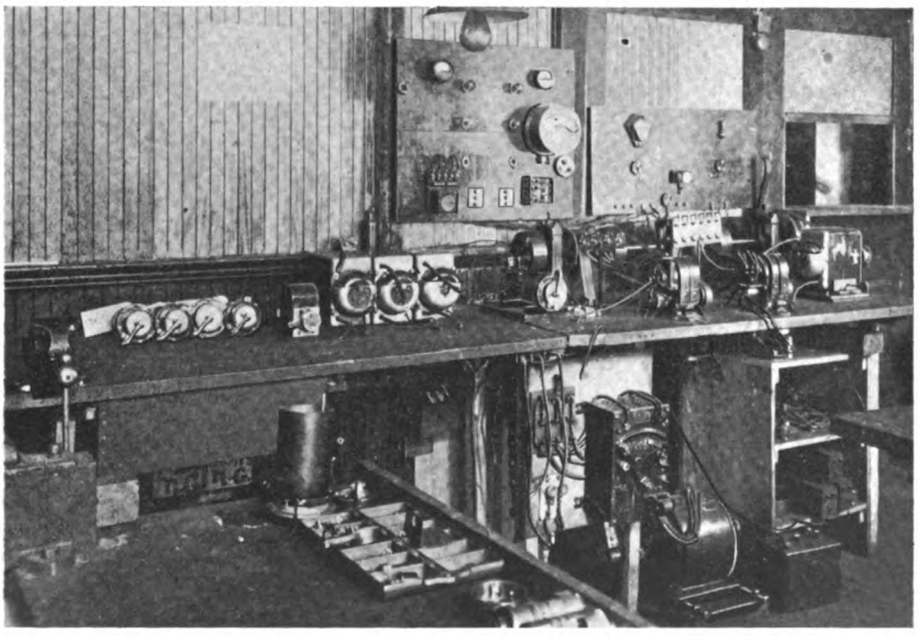
Vibrating coils, condensers high and low-tension armatures, high-tension windings, direct current armatures, field windings and magnetos are tested separately on another test table, which is equipped with volt meter, milli volt meter, ammeter, milli ammeter, faradmeter and magnet meter.

There are about 40 different makes of vehicles equipped with Splitdorf-Dixie ignition systems as standard equipment. There are about 15 car manufacturers who employ Splitdorf Apelco starting and lighting systems as standard and 20 who use the Splitdorf Common Sense spark plugs.

Garage Has Ample Accommodations.

The garage in the basement is set aside solely for the convenience of those patrons who bring in their cars to have the electrical equipment attended to. Ten cars can be accommodated at one time. It is not essential that either the car or the dismounted equipment be brought to the service station, though it is desired, for the company is prepared to send one or more of its experts to any point within the New England territory.

Customers are afforded full protection in the matter of charges, time of delivery, etc., through there being a compre-



The Special Testing Apparatus in the Repair Department by Which Both Old and New Models of Splitdorf and Apple Systems Can Be Tested—This Is One of the Most Interesting and Important Parts of the Station's Equipment.

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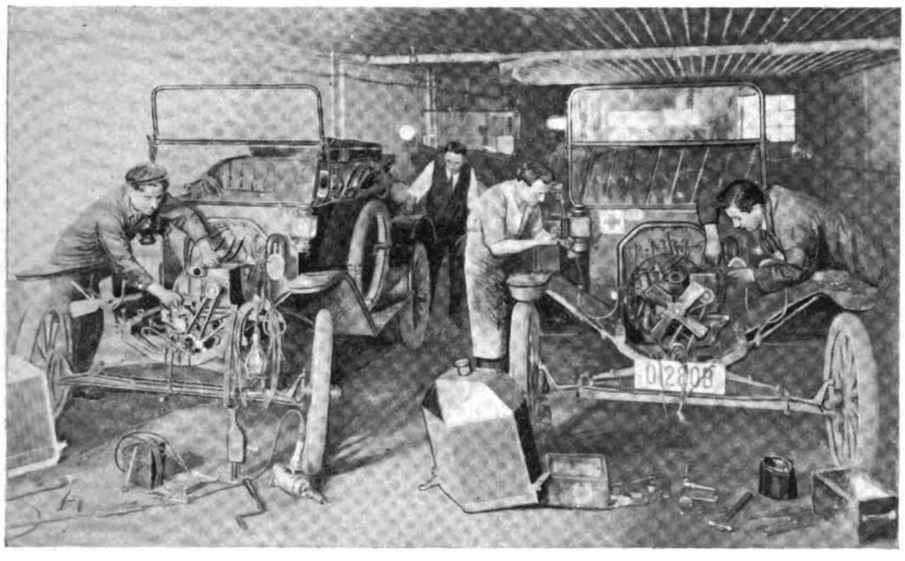
hensive tag system in use. Each car, magneto and coil received is immediately "tagged" with a card which shows the



A View of Part of the Garage, Which Has Accommodations for 10 Cars at One Time, and Where Work Men Overhaul and Install Splitdorf Electrical Equipment—Either Pleasure Cars or Commercial Trucks Are Handled Here.

customer's name and address, the date received and date of delivery and time promised, the number of the coil or magneto and the number and name of the car, and what is to be done to the component or equipment. Each tag is given a serial number, and on the back has space for the recording of the parts and supplies used, such as brushes, platinum screws and rivets, rollers and pins, etc., and a space for the number of hours of labor expended. When the job is completed these cards are filed away so that at any time during the ensuing two years they can be produced to show just what was done on a particular job.

In general features this description of the Boston company applies to all other Splitdorf branches, and is illustrative of the scope of the Splitdorf Electrical company's endeavor to afford high-grade service to every user of its equipment. By having these service stations in strategic positions in all parts of the country, the parent company is able to devote its entire attention to the production of the thousands of sets of equipment which are in demand by car manufacturers. From the dealers' standpoint the opportunity to send equipment to a nearby Splitdorf branch to be overhauled and adjusted by expert work men insures high-grade workmanship at minimum cost of time and money.

BUYS SHOCK ABSORBER COMPANY.

W. Smalley Daniels, head of the New Era Spring and Specialty Company, Detroit, manufacturer and direct sales representative of a large variety of motor car specialities, announces that his concern has bought out the business of the National Shock Absorber Company, Grand Rapids, Mich. Mr. Daniels has for some time been handling the output of this company, and now has added the plant to his other large holdings.

Mr. Daniels is well known in Grand Rapids, as well as throughout the industry, he having been one of the pioneers in the Michigan city and associated with the firm of Jarvis & Daniels. Starting in the bicycle business several years ago, he turned to the motor car field, first acting as representative of the Toledo steamer in Grand Rapids. He was the first agent of the Cadillac there, and it was he who built the garage now occupied by the Motor Mart.

Today Mr. Daniels controls one of the largest accessory businesses in the United States and in addition to the main office of the company in Detroit has branches in Boston, New York and Chicago.

WORCESTER DEALERS ELECT.

The Worcester Automobile Dealers' Association has laid plans for a field day for dealers and their employees some time in June. At a recent meeting the following officers were elected: President, Eugene L. Caton; vice president, John C. Harvey; secretary-treasurer, Oliver P. Tyler; clerk, J. Gould, Jr. These officers and the following members compose the board of directors: Harry J. Murch, S. E. Hale, Frank H. Kenney and Frederick S. Howard.

GARAGE MEN ORGANIZE.

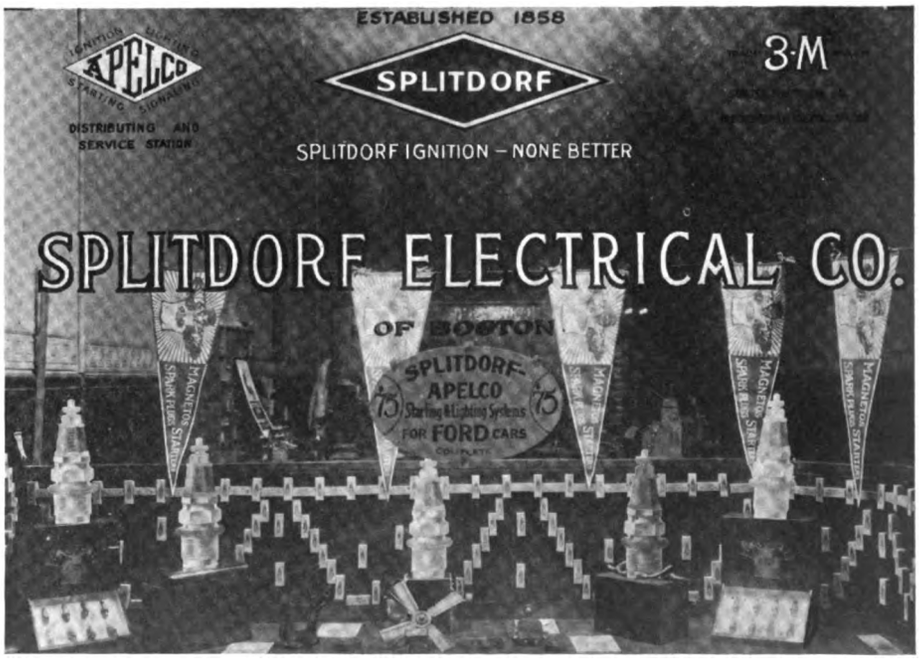
Preliminary organization of a body to be known either as the Cincinnati Automobile Trade Association, or the Hamilton County Automobile Trade Association, was effected recently. E. J. McGuirk of the national organization, and A. J. Peebles, secretary-treasurer of the state body, were present to aid in forming the organization which will be affiliated with the larger bodies. Harry Singer, a member of the state board of trustees, was elected temporary chairman and Charles W. Classen was made temporary secretary.

HAMMEL AN OHIO ORGANIZER.

R. L. Hammel has been made assistant secretary and organizer for the Ohio Automobile Trade Association. He will have headquarters in Columbus. A. J. Peebles is secretary and treasurer.

ANNUAL MEETING AT PEORIA.

The Peoria Automobile and Dealers' Association recently met and after electing officers decided to affiliate with the Chicago organization. Those chosen for office are H. B. Pinkerton, president; C. E. Lyall, vice president; R. T. Graham, treasurer; Robert Fitch, secretary. Mr. Pinkerton, Mr. Vaughn and Roland Travis were elected directors for three-year terms. Fred Poshard was elected for one year.



A Striking Display in the Branch's Spacious Show Window, Which Faces Boylston Street—In the Background Can Be Seen a Part of the Salesroom and the Front Partition of the Manager's Private Office.

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ACTIVITIES OF MEN YOU KNOW.

News of Prominent Members of the Manufacturing, Distributing and Retailing Motor Vehicle Trades.

Roscoe A. Pickens is now managing director of sales for the Metz Company, Waltham, Mass. Mr. Pickens joined the

Roscoe A. Pickens, Managing Director of Sales for the Metz Company.

Metz organization in September, 1911, and since that time has been in close touch with the sales problems of the company. His experience has included duties in such positions as sales manager, advertising manager and merchandising representative, both in New England and Texas, and he has a wide acquaintance among the country's distributors of motor vehicles and accessories.

Edward A. Dauer, formerly connected with the Packard Motor Car Company in the New England territory, has assumed the duties of New England division sales manager for the Chase Motor Truck Company of Syracuse, N. Y. Mr. Dauer's headquarters are at Providence, R. I.

Arthur A. Bull is now associated with the Northway Motor and Manufacturing Company, Detroit, Mich., in the capacity of assistant chief engineer. He was formerly in a similar position with the Cole Motor Car Company, Indianapolis.

D. McCall White, chief engineer of the Cadillac Motor Company, was chosen chairman of the Detroit section of the Society of Automobile Engineers at the annual election of officers.

Louis Chevrolet, the racing driver, after whom the Chevrolet car was named, has been appointed designer and chief engineer of the American Motors Corporation.

M. W. Hanks, who is in charge of western sales of the automobile equipment department of the Westinghouse Electric and Manufacturing Company, now has his headquarters in Chicago. He was formerly located in the sales service station of the company at Indianapolis.

R. C. Ritchie has been transferred to the main office of the Westinghouse Electric and Manufacturing Company at Shadyside Works, Pittsburg, Penn. He was formerly in charge of the office of the Automobile Equipment Sales Service Station in Chicago.

L. I. Seaman, formerly with the Ajax Tire Company, has been appointed district representative of the Knight Tire Company for western and northern New York.

A. B. Pfau, Cincinnati, O., has been appointed advertising manager of the automobile specialty department of the Pfau Manufacturing Company.

Charles B. Whittelsey has been elected president and factory manager of the Hartford Rubber Works, succeeding as president E. S. Williams of New York City, who is president of the Rubber Goods Manufacturing Company. Mr. Whittelsey was vice president of the company and factory manager prior to the election.

S. A. Foster has been appointed manager of the Hartford office of the White Motors Company of New Haven. For the past five years he has sold pleasure cars. The New Haven organization has taken quarters at 45 Gold street and plans to conduct a much livelier campaign on the White cars than ever before.

Chess W. Flinn, who has been associated with the Chevrolet Motor Company of New England in the capacity of retail sales man, later as branch manager at Stamford, Conn., and recently as wholesale man, is now connected with the Inter State Boston Company, distributors of the Inter-State car. He will have charge of the wholesale end of the Inter-State sales department.

Roy Heartz, promotion manager of the Hupp Motor Car Company, has resigned to become assistant sales manager of the Premier Motor Corporation, Indianapolis. James G. Roe has taken charge of the promotion work and Arthur E. Dixon has taken Mr. Roe's position in the sales department.

C. B. Sawyer has been appointed sales manager of the Jackson Automobile Company. He was formerly secretary of the Detroit Board of Commerce and of the Williams Brothers Company.

Earl Welborn, formerly assistant to Henry B. Joy, president of the Packard Motor Car Company, has resigned to become general manager of Isko, Inc., Detroit, a new corporation, which has taken over the old plant of the Grabowsky Power Wagon Company.

R. W. Donahue, Detroit, Mich., has joined the sales department of the Liberty Motor Car Company. He was formerly connected with the Oakland Motor Company.

S. F. Dupree, Jr., formerly head of the Ford department of the Westinghouse Electric and Manufacturing Company, Pittsburg, Penn., is now vice president in charge of sales and advertising of the Caskey-Dupree Manufacturing Company.

L. A. Austin has been appointed retail sales manager of the Loveland Company, Saxon distributor for Cleveland.

A. E. Thomson has been appointed managing director of the Sheepshead Bay Speedway. He will continue as general manager and vice president.

Robert McCormack has joined the Hurley-Earley, Inc., Broad and Race streets, Philadelphia, and will have charge of the sale of National cars.

L. F. Stevens, formerly manager of the Chicago branch of the Chase Motor Truck Company, has been made division sales manager for the northwestern states, with headquarters at 2421 S. Park avenue, Chicago.

G. B. Stone has been placed in charge of the Ohio-Indiana territory of the Remy Electric Company, Anderson, Ind., as sales engineer. He has been a member of the company's engineering department for many years, doing special sales work.

B. W. Collins has been appointed assistant treasurer and assistant to the president of the Springfield Body Company. He was formerly assistant treasurer of the old Lozier Motor Company and for some time was connected with the United States Tire Company.

C. R. Short, Detroit, Mich., former engineer for the Russell Motor Car Company, Toronto, Ont., has assumed the duties of chief engineer of the Northway Motor and Manufacturing Company, succeeding E. G. Gunn, who has resigned to become chief engineer for the Premier Motor Corporation, Indianapolis, Ind.

Fred A. Wade has resigned as purchasing agent of the Maxwell Motor Company. Mr. Wade's long connection as purchasing agent of the Ford Motor Company, E-M-F Company and Studebaker Corporation, has made him one of the prominent men of the field.

George Schuster has been appointed general superintendent in the service division of the Henshaw Motor Company,

George Schuster, General Superintendent of the Henshaw Motor Company.

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Dodge Brothers dealer at Boston. Mr. Schuster is well experienced. He drove a car around the world and in the course

Robert H. Crooker, Assistant Advertising Manager, Chalmers Motor Company.

of the journey, repair shops and supplies of extra materials were at times a thousand miles or more away, so that he and his crew had to depend entirely upon their own resources. He also crossed Siberia, where there are practically no roads.

Robert H. Crooker was recently appointed assistant advertising manager of the Chalmers Motor Company, Detroit. He was formerly advertising manager of the Regal Motor Car Company. Mr. Crooker also spent seven years on the staff of the Detroit News and was connected with the Burroughs Adding Machine, editing its house organ, sales bulletins and company's other publications.

D. K. Moore, formerly sales manager of the Weston-Mott Company of Flint and for five years president of the American Distributing Company at Detroit, Mich., has been appointed assistant general manager of the Vim Motor Truck Company, Philadelphia, Penn.

Edward C. Gerspacher has assumed the office of vice president and general manager in charge of the "Dort" sales for the Foshier Motor Company, Omaha, Neb., in which he has purchased an interest.

Harry G. White, formerly New England representative for Panhard oil, has joined the Boston branch of the Pennsylvania Rubber Company sales force, and will represent the company in New Hampshire and Vermont.

Ross Garner has joined the sales staff of the H. L. Olive Company, Spokane, Wash., distributor of Overland and Willys-Knight cars. He was formerly the representative of the Colorado Fuel and Iron Company.

Fred W. Van Sicklen, formerly associated with the Detroit office of the Taylor-Critchfield-Clague Company, is now identified with the Dunlap-Ward Advertising Company as vice president and general representative. Mr. Van Sicklen has been associated with the automobile industry since its inception. He will make his headquarters in Chicago, Ill.

William B. Levey has severed his connection with the Auto Accessories Company, Chicago, to take charge of buying for the Service Motor Supply Company of the same city. Mr. Levey has had experience with numerous auto concerns, serving in the capacity of buyer for the Auto Parts Company of Chicago, the Borland-Grannis Company and the Ideal Electric Vehicle Company.

H. Mansell Hackett, president of the Argo Motor Company, Inc., Jackson, Mich., has returned from a successful business trip in the East. While in New York he secured a large contract for the sale of the Argo cars in France from the exporters of manufacturers' products.

W. R. Wheeler has sold his interest in the Wheeler-Sheerin Company, Indianapolis, and has incorporated the W. R. Wheeler Company, to conduct an exclusive wholesale business in automobile accessories and motor shop supplies. The capital stock is $25,000.

T. W. Frech, general manager of the Peerless Motor Car Company, one of the components of the Peerless Truck and Motor Corporation, has resigned owing to ill health.

J. Walter Drake, president of the Hupp Motor Car Company, Detroit, has been elected president of the Detroit Cross-Country Riding Club, a new social organization, which plans to re-establish the horse as a means of "touring" in Detroit.

W. A. Somerville has been appointed advertising manager of the Republic Motor Truck Company, Alma, Mich. He was formerly advertising manager of the Rapid Motor Truck Company, Pontiac.

W. H. Yule has been appointed sales manager of the mechanical division for the B. F. Goodrich Company, Akron, O. He was formerly manager of the Goodrich branch in New York City.

F. E. Richardson has been appointed president and general manager of the Rix Motor Car Company, 917 Euclid avenue, Cleveland, agent for Dort and KiselKars in Ohio.

Charles K. Clark has been appointed sales manager of the Monroe-Clark Motor Company, distributor for Velie and Briscoe cars, Buffalo, N. Y. He has been identified with the company for years and formerly served as secretary.

C. S. Fox, formerly director of service for the Lozier Motor Company, is now with the Wetmore-Quinn Company, distributor for Paige-Detroit and Saxon cars in Detroit.

Peter James has charge of the service station of the Foster-Larson Company, Spokane, Wash. He was formerly a racing driver.

H. W. Taylor, New York City, has become general manager of the Allen Pressure System Company. Formerly he was general manager of the General Motors Company. His headquarters will be at the offices of the company, 1926 Broadway.

R. C. Hupp, Detroit, has become associated with the Emerson Motors Company, a Delaware corporation, which proposes to manufacture a five-passenger car to sell at about $395. Mr. Hupp organized the original Hupp Motor Car Company and later left it to head the R-C-H Corporation, and after the latter's failure organized the Monarch Motor Car Company.

J. C. Shiveley was elected president and treasurer of the Alliance Rubber Company, Alliance, O., at a meeting recently held by the board of directors. The other officers being: Vice president and general manager, Milton Bejach; secretary, W. H. Christensen; assistant treasurer, John B. Pow.

A. H. Knaus has resigned his position with the Braly Auto Company to accept the managership of the Portland branch of the Gerlinger Motor Car Company, Pathfinder, Hollier and Federal agents.

C. B. Dakin, formerly in charge of the purchasing of the Oakland Motor Car Company, has joined the Continental Motors Company.

Bert Dingley, Los Angeles, Cal., who was injured in the Tacoma Speedway race, July 4, 1914, has recovered sufficiently to enable him to return to the motor car industry. Mr. Dingley was recently appointed manager of the William R. Ruess Company and will devote his energies to the selling of Mitchell cars.

L. C. Freeman, who was one of the incorporators and chief engineer of the Denby Motor Truck Company, has resigned his position. He still retains his financial interest in the company.

W. I. Brown has joined the Scripps-Booth Company in the capacity of assistant sales manager. "Doc" Brown is known by every dealer of importance from coast to coast and has been connected with some of the largest sales campaigns of the industry. He was formerly in the sales department of the Studebaker distributor at Indianapolis, and for the past two years has been supervisor of districts for Dodge Brothers.

W. I. Brown, Assistant Sales Manager of the Scripps-Booth Company.

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J. Whyte, Indianapolis, Ind., has been appointed manager of the storage battery service department of the Prest-O-Lite Company, Inc. Previous to his connection with this company, Mr. Whyte served as electrical engineer for the Maxwell Motor Company. He has been chief engineer for the Scripps-Booth Company and prominently connected with other companies in the automobile and electric starter business.

A. E. Barker, who has been district representative at Cleveland for Dodge Brothers, has been promoted to the position of supervisor of districts. He is succeeded by A. T. Stanton, formerly an assistant in that territory, but who for the past year has been Dodge Brothers' district representative in the British Isles.

Peter S. Steenstrup has sailed for London in the interest of the Hupp Corporation, Detroit, Mich. He is special foreign sales representative and will visit London, Paris, Madrid and Rome. He has had wide experience in foreign trade and has just returned from a six months' visit to the South American countries.

Bryce E. Blackley is now with the home office of the Chase Motor Truck Company of Syracuse, N. Y. He was formerly New England division sales manager of the company. Mr. Blackley will have direct charge of the dealers' department and motor truck research work, succeeding Mr. W. A. Clare, who has resigned to become sales manager of the Atterbury Motor Truck Company, Buffalo, N. Y. Mr. Blackley will be assistant to Mr. H. T. Boulden, general sales manager of the company.

H. F. Hartman, who has been identified with the service activities of the Studebaker Corporation in past years, has been appointed superintendent of the Detroit Studebaker service station. Previous to his present appointment, Mr. Hartman was in charge of service at the Philadelphia branch and before that supervisor of service for the states of Texas and New Mexico.

Z. S. Vertner has taken charge of the Philadelphia branch of the Oakland Motor Company. He is well known in the farm implement manufacturing circles. Mr. Vertner succeeds T. S. Johnston, who for several years has been branch manager.

R. W. Rost, Newark, N. J., has been promoted to manager of the Goodyear branch at Albany, N. Y., succeeding E. B. Sigerson, recently appointed manager of the Buffalo branch.

Garth A. Dodge is now chief engineer and factory manager for the Dayton Rubber Manufacturing Company, Dayton, O., makers of the Dayton airless and the Dayton pneumatic tires. Mr. Dodge is a member of the American Society of automobile engineers. The sale of Dayton tires has grown rapidly and many new dealers have been added to the selling organization. The increase has compelled the company to add equipment which has doubled their manufacturing capacity.

J. A. Haskell has been appointed branch manager of the Studebaker at Des Moines, Ia. H. H. Brown will be his assistant. Mr. Haskell was formerly assistant branch manager at Cleveland.

George H. Higgins, Rockford, Ill., has been appointed factory manager of the Burd High Compression Ring Company. He goes to the company with an extended experience gained from his former associations with the Stone & Weber Corporation, the Westinghouse Electrical Company, Ford Motor Company, Buick Motor Company and the Oakland Motor Car Company. He will have general supervision over factory matters and will give special attention to problems involving production.

George L. Sullivan, who has been associated with Bromfield & Field, Inc., advertising agency of New York City, has been appointed advertising manager of the Fisk Rubber Company, Chicopee Falls, Mass. Mr. Sullivan has had unusual experience in all branches of advertising. His initial advertising experience was with the Boston Woven Hose and Rubber Company in the sale of Vim bicycle tires. Later he became advertising and special sales manager of the

George L. Sullivan, Advertising Manager of the Fisk Rubber Company.

Daniels & Fisher Stores, Denver. For three years he was with the American Locomotive Company, first in charge of advertising and later in the establishment of agencies.

C. W. Francis, president of the Francis Auto Company of Omaha, Neb., the Detroiter distributors for that section of the country, visited the Detroiter plant and placed an order for six carloads of Detroiter "Sixes."

Alfred Reeke has been appointed general sales manager of the Thomas B. Jeffery Company, Kenosha, Wis. He has taken the position of Edward S. Jordan, who has resigned to become head of the Jordan Motor Car Company. He was formerly president of the Reeke-Osmond Motor Car Company, Milwaukee, Wis.

R. H. Spear has been appointed general sales and advertising director of the Gramm-Bernstein Company, Lima, O.

W. B. Riley, formerly assistant sales manager of the Thomas B. Jeffery Company, has become assistant to E. S. Jordan in the direction of sales of the Jordan Motor Car Company, Cleveland, O.

Cyril O. Assmus has been appointed export representative of the Maxwell Motor Company, Detroit, succeeding A. L. Stephens, South American representative of the company.

H. S. Dunlavy, formerly in charge of the Federal truck Chicago branch, is now with the Kelly-Springfield branch as manager.

R. H. Young has joined the sales force of the Oldsmobile Company of Washington and will assist Sales Manager Frank Liddell. He has been identified with the sale of motor trucks in Spokane.

D. E. Ford has been appointed Chicago branch manager of the Olds Motor Works, Lansing, Mich. He was formerly Chicago wholesale sales manager for the Studebaker Corporation and later representative of the Oldsmobile company in the southwestern part of the United States and Cuba and Mexico.

C. W. Woodward has joined the sales staff of the Selby Company, Washington, D. C., and will devote his time to the sale of Paige cars.

S. A. Heist is now manager of the Foster-Larson Company, 225 East Alder street, Walla Walla, Wash., distributor for Paige and National cars and Garford and Stewart trucks.

A. B. McGowan has joined the sales force of the F. S. Howard Motor Company, Chase dealers, in Worcester, Mass. He was formerly with the Chase dealer in Providence, R. I.

J. C. Miller has been appointed general sales manager of the Lippard-Stewart Motor Car Company, Buffalo, N. Y. He has been secretary and purchasing agent of the company since 1911.

C. A. Mattison, who has been sales manager of the Detroit Engineering Products Company, makers of Paramount Interrupters and other devices, has been appointed general manager of the company. Mr. Mattison's change of office also marks the introduction of a new product, specially designed for Ford and known as the Paramount Snubbers.

William H. Schwartz, for the past seven years general sales manager of the Metz Company, has resigned his position with that firm for the purpose of entering business on his own account. Mr. Schwartz is one of the best known automobile salesmen in the country, more especially in New England. He has had full charge of the sales offices of the Metz Company and has made many extensive trips annually in connection with his supervision of the offices and agencies from coast to coast.

Thomas L. Young is now assistant advertising manager of the Allen Motor Company, Fostoria, O. He was formerly with the Overland in the advertising department.

A. H. Allen is now assistant sales manager of the Alvan T. Fuller Company, distributor of Packard cars in Boston.

L. S. Deland, formerly sales manager for the Studebaker Corporation in Milwaukee, is now sales representative for Harry Newman, Inc., of the same city, and will have charge of the distribution of Chalmers cars there and throughout Wisconsin.

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NATIONAL TRADE INFORMATION EXCHANGE.

Opportunities for Car and Accessory Manufacturers, Jobbers and Dealers which Have Been Reported from All Parts of the United States During the Past Month.

In this department subscribers are offered the opportunity to make known without cost to themselves those of their wants that pertain to the manufacture and distribution of motor vehicles. This service is free to all subscribers to the Accessory and Garage Journal and affords a medium whereby an inquiry will have the largest possible circulation among trade interests. If it is desired, the identity of the inquirer will not be disclosed in these columns. Replies to such requests should be sent to this office with sufficient postage for forwarding.

Gasoline Pleasure Cars.

Tuscon, Ariz.; Lannis & Hartley, 125 N. Sixth avenue, is interested in gasoline pleasure cars; selling price, $500 to $1750.

San Diego, Cal.; San Diego Motor Company (George F. Bradley, Manager), is in the market for gasoline pleasure cars; selling price, $500 to $1500.

Des Moines, Ia.; Rae Chandler Auto Company, wishes to secure the agency for gasoline pleasure cars; selling price, $500 to $800.

Binghamton, N. Y.; George W. Decker, Ferry street, would like to secure the agency for gasoline pleasure cars; selling price, $500 to $1000.

Pittsburg, Penn.; Wilkinsburg Auto Company, room 1116 Berger building, wants information regarding the agency for gasoline pleasure cars; selling price, $1000 to $1500.

Branchville, S. C.; G. W. Reeves (Herff-Brooks agent), is interested in gasoline pleasure cars selling at a low price.

Winner, S. D.; W. H. Fulwider wishes to obtain the agency for gasoline pleasure cars; selling price, $500 to $2000.

Houston, Tex.; Conant Automobile Company, corner San Jacinto and Walker, is in the market for gasoline pleasure cars; selling price, $1700 to $3000.

Gasoline Commercial Cars.

Tuscon, Ariz.; Lannis & Hartley, 125 N. Sixth avenue, is interested in gasoline commercial cars; selling price, $500 to $2500.

Binghamton, N. Y.; George W. Decker, Ferry street, wants information regarding the agency for commercial cars; selling price, $500 to $1000.

Pittsburg, Penn.; Wilkinsburg Auto Company, 1116 Berger building, is interested in gasoline commercial cars; from ¾ to two tons capacity.

Houston, Tex.; Conant Automobile Company, corner San Jacinto and Walker, is in the market for gasoline commercial cars.

Special Opportunity.

Pittsburg, Penn.; Wilkinsburg Auto Company, room 1116 Berger building, would consider the agency for Ford cars in Western Pennsylvania and Eastern Ohio.

Pietermaritzburg, South Africa; H. V. Kilburn, 215 Longmarket street, announces through the offices of J. E. Sitterley, foreign sales manager, 47 Broadway, New York City, that he would like to receive printed matter and prices on small low priced motor cars and also on electric runabouts. The business would probably be placed by J. E. Sitterley, who also would attend to payments and shipments. Manufacturers seeking satisfactory representation in South Africa should write direct to Mr. Kilburn, sending full details in the first letter.

Electric Commercial Cars.

Houston, Tex.; Conant Automobile Company, corner Jacinto and Walker, would like to secure the agency for electric commercial cars.

Motorcycle Agencies.

Binghamton, N. Y.; George W. Decker, Ferry street, is interested in motorcycles; selling price, $125 to $200.

Representatives Wanted.

San Diego, Cal.; San Diego Motor Company (George F. Bradley, Manager), wants representatives in San Diego and Imperial Valley counties.

Grand Rapids, Mich.; W. S. Farrant & Son would like to secure agents in Cadillac, Ludington, Muskegon, Big Rapids, Holland, Grand Haven and Traverse City, Mich.

Pittsburg, Penn.; Wilkinsburg Auto Company, room 1116 Berger building, wants local distributors throughout Western Pennsylvania and Eastern Ohio.

Accessories and Equipment.

Tuscon, Ariz.; Lannis & Hartley, 125 N. Sixth avenue, wants air compressors, air pumps, autogenous welding equipment, batteries, bodies, bulbs, bumpers, carburetors, cements, charging apparatus, drills, dynamometers, elevators, engines, gear cutting machines, generators, goggles, graphite, greases, grinders, headlights, horns, hydrometers, ignition, jacks, lamps, machinery, magnetos, maps, meters, measuring instruments, oils, packing, plugs, presses, primers, printed matter, punches, radiators, ratchet drills, reamers, reflectors, rims, searchlights, shock absorbers, speedometers, starters, storage systems, tanks, tire accessories, tires, tools, tops and parts, vises, voltmeters, waste, wrenches and special bodies for pleasure cars. The goods are to be used for general accessories and garage.

San Diego, Cal.; San Diego Motor Company (George F. Bradley, Manager), wishes to secure air compressors, air pumps, anti-rattlers, anvils, arbor presses, asbestos, autogenous welding equipment, axles, banding, batteries, bearings, belts, bodies, boilers, bolts, brakes, brushes, bulbs, bumpers, burners, cabinets, cable, camshafts, caps, carbide, carburetors, cases, castings, celluloid, cements, chains, charging apparatus, chemical tanks, clamps, clips, cloth, clutches, coils, collars, commutators, cones, connectors, controllers, couplings, cranes, cups, curtains, cutters, cushions, cylinder machines, cylinders, dashes, dimmers, discs, doors, drills, drums, dynamometers, dynamos, elevators, emblems, engines, fans, fasteners, fenders, fire extinguishers, forgings, frames, furnaces, gaskets, gasoline, gauges, gear cutting machines, gears, generators, glass, goggles, graphite, greases, grinders, guards, guns, hammers, headlights, heaters, hoists, holders, horns, hose, hubs, hydrometers, ignition, indicators, injectors, jacks, jigs, joints, knuckles, lamps, lathes, leather, levers, locks, lubricators, machinery, magnetos, maps, mechanical starters, metal parts, meters, measuring instruments, molds and cores, motor controllers, motors, mufflers, nuts, odometers, oils, packing, paints, pans, patches, pedals, pinions, pins, pistons, platinum, plugs, polishes, presses, primers, printed matter, pullers, pulleys, pumps, punches, purifiers, races, racks, radiators, ratchet drills, reamers, rectifiers, reflectors, regulators, removers (carbon), rests, rheostats, rims, rods, rubber, scrapers, screws, searchlights, seats, separators, shafting, shapers, shims, shock absorbers, soaps, sockets, solder, speedometers, spokes, springs, stampings, starters, steel, steering wheels, steps, storage systems, strainers, switchboards, switches, tanks, tape, terminals, testers, timers, tire accessories, tires, tools, tops and parts, transmissions, trimmings, trunks, tubing, turntables, upholstery, valves, vaporizers, varnishes, ventilators, vises, voltmeters, vulcanizers, washers, washstands, waste, wearing apparel, wheels, whistles, windshields, wire, wrenches and special bodies for pleasure and commercial cars.

Freeport, Ill.; Stover Steel Tank Company is interested in bodies, carbide (buy in ton lots), cranes, hoists, plugs, removers (carbon) and special bodies for pleasure and commercial cars.

Detroit, Mich.; The Knight Company, 922 D Whitney building, is in the market for emblems, gauges, horns and stampings.

Grand Rapids, Mich.; W. S. Farrant & Son is interested in air compressors, air pumps, anti-rattlers, anvils, arbor presses, asbestos, autogenous welding equipment, axles, banding, batteries, bearings, bodies, bolts, brakes, brushes, bulbs, bumpers, cabinets, cable, camshafts, cans, carbide, carburetors, cases, castings, celluloid, cements, chains, charging apparatus, chemical tanks, clamps, clips, cloth, clutches, coils, collars, commutators, cones, connectors, controllers, couplings, cranes, cups, curtains, cutters, cushions, cylinder machines, cylinders, dashes, dimmers, discs, doors, drills, drums, dynamometers, dynamos, elevators, emblems, engines, fans, fasteners, fenders, fire extinguishers, forgings, frames, furnaces, gaskets, gasoline, gauges, gear cutting machines, gears, generators, glass, goggles, graphite, grinders, guards, guns, hammers, headlights, heaters, hoists, holders, horns, hose, hubs, hydrometers, ignition, indicators, injectors, jacks, jigs, joints, knuckles, lamps, lathes, leather, levers, locks, lubricators, machinery, magnetos, maps, mechanical starters, metal parts, meters, measuring instruments, molds and cores, motor controllers, motors, mufflers, nuts, odometers, oils, packing, paints, pans, patches, pedals, pinions, platinum, plugs, polishes, presses, primers, printed matter, pullers, pulleys, pumps, punches, purifiers, races, racks, radiators, ratchet drills, reamers, rectifiers, reflectors, regulators, removers (carbon), rests, rheostats, rims, rods, rubber, scrapers, screws, searchlights, seats, separators, shafting, shapers, shims, shock absorbers, soaps, sockets, solder, speedometers, spokes, springs, stampings, starters, steel, steering wheels, steps, storage systems, strainers, switchboards, switches, tanks, tape, terminals, testers, timers, tire accessories, tires, tools, tops and parts, transmissions, trimmings, trunks, tubing, turntables, upholstery, valves, vaporizers, varnishes, ventilators, vises, voltmeters, vulcanizers, washers, washstands, waste, wearing apparel, wheels, whistles, windshields, wire, wrenches and special bodies for pleasure and commercial cars.

Grand Rapids, Mich.; The Field Motor Company is in the market for forgings, gears, pistons, plugs, pumps, rods, screws and valves. The goods are to be used for motors.

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NEW YORK AND DETROIT EXCHANGE QUOTATIONS.

Condition of Automobile Securities and General Material Markets as Reported at the Middle of Last Month and on the Corresponding Day of this Month.

The tabulations following show the advance or decrease in the quoted stock exchange prices of the several active motor vehicle and kindred securities, and of the change in prices of the general material market, as it relates to the motor car industry.

AUTOMOBILE SECURITIES QUOTATIONS.

	April 6		May 11	
	Bid	Asked	Bid	Asked
Ajax Rubber Co.	69¼	70¼	65	67½
Aluminum Cast., pfd.	..	..	..	..
Case, J. I., pfd.	85	87½	..	..
Chalmers Motor, com.	155	160	150	158
Chalmers Motor, pfd.	98	101	89	99¼
Chevrolet Motor pfd.	170	175	205	207
Electric Storage Battery	62	64	58	60
Firestone Tire, com.	765	..	820	850
Firestone Tire, pfd.	113	115	114	116
General Motors, com.	460	480	425	440
General Motors, pfd.	114	117	119½	120½
Goodrich, B. F., com.	76⅛	76½	77	77½
Goodrich, B. F., pfd.	114½	115½	114	116
Goodyear Tire, com.	337	340	385	393
Goodyear Tire, pfd.	115	117	119	121
Gray & Davis, Inc., pfd.	..	..	..	..
International Motor, com.	18	20	9	12
International Motor, pfd.	35	40	20	30
Kelly-Springfield Tire, com.	75⅛	75½	72½	73½
Kelly-Springfield Tire, pfd.	96	98	96	98
Kelly-Springfield Tire, 2nd pfd.	..	..	..	..
Maxwell Motor, com.	72¼	72½	82	82½
Maxwell Motor, 1st pfd.	86	87	86⅜	86⅝
Maxwell Motor, 2nd pfd.	55¾	56¼	59¾	60¾
Miller Rubber, com.	235	240	255	270
Miller Rubber, pfd.	112	116	115	..
New Departure, com.	175	178	190	195
New Departure, pfd.	111	..	112	..
Packard Motor Car, com.	163	170	165	175
Packard Motor Car, pfd.	100	104	100	104
Paige-Detroit Motor Car.	690	..	750	850
Peerless Motor Truck Corp.	25½	26½	23	25
Portage Rubber, com.	70	72	85	88
Portage Rubber, pfd.	106	108	107½	108½
Regal Motor Truck Co.	10	16	18	25
Reo Motor Car	26½	27½	28½	29¾
Reo Motor Truck	34⅜	34¾	38¾	39½
Splitdorf Electrical	..	..	..	..
Stewart-Warner, com.	86	88	85	87
Stewart-Warner, pfd.	109	..	..	..
Studebaker, com.	141½	142½	132½	133½
Studebaker, pfd.	111	113	107	110
Swinehart Tire	88	90	83	84
Texas Company	195	197	190	192
U. S. Rubber, com.	50⅝	50⅞	53½	54½
U. S. Rubber, 1st pfd.	109½	110½	109¼	110
Vacuum Oil	230	240	237	240
White Motor Co.	49½	50	49	51
Willys-Overland, com.	224	226	228	230
Willys-Overland, pfd.	102	104	104	105

DOMESTIC CRUDE OIL PRICES.

The prices of crude petroleum at the wells during the middle of the month of May were:

Pennsylvania dark	$2.60	Corsicana heavy	$.80
Mercer black	2.10	Electra	1.55
Cabell	2.12	Henrietta	1.55
New Castle	2.10	Caddo, La., 38°	1.55
Corning	.210	Caddo, La., heavy	.90
Wooster	1.90	Plymouth	1.6[illegible]
North Lima	1.78	California oil	58a59
South Lima	1.73	Healdton	.80
Indiana	1.58	Moran	1
Princeton	1.80	Strawn	1.55
Somerset 32°	1.95	Thrall	1.55
Ragland	.90	De Soto	1.4[illegible]
Illinois above 30°	1.82	Crichton	1.05
Kan. & Okla.	1.55	Canada	2.13
Corsicana light	1.55		

Naphtha.

	10-gal. drums	
	Under 100 cases	100 cases and over
Benzine, 59-60°	34¼	33¾
Stove	34½	34
Auto, 68-72°	38	37½
Naphtha, 73-76°	42	41½

	In cans and cases		
	Under 100	100-199	200-299
Benzine, 59-72°	29¼	29	28¾
75 a 76°	37	36¾	36½
Stove	29½	29¼	29
Auto, 68-72°	33	32¾	32½

NEW YORK CITY PRICES.

New York City prices for petroleum and its products were:

Petroleum.

Crude, barrels, a gallon	15a18	Fuel, 31°	9
Refined, barrels	12	Fuel, 34°	9½
Tank wagons delivery	9		

Naphtha.

Auto in wood	28	V. M. & P. deod., in steel	23
Auto in garages, steel bbls.	24	V. M. & P. deod., in wood	26

Gasoline.

Gas machine, steel	37	68-70° steel	29
73-76°	32	68-70° wood	32
73-76° wood	35		

GENERAL MARKET PRICES.

	April 11	May 15
Antimony	43½	34½
Iron, foundry, S., ton	15.00	15.00
Iron, foundry, N., ton	19.75	19.00
Iron, Bessemer, ton	20.00	20.50
Steel, Bessemer, ton	45.00	45.00
Beams and chan., 100 lbs.	2.669	2.769
Copper, elec., 100 lbs.	28.75	30.00
Copper, lake, 100 lbs.	28.75	30.00
Lead, 100 lbs.	7.75	7.50
Tin, 100 lbs.	54.00	49.12½
Petroleum, Penn., cr., bbl.	2.60	2.60
Petroleum, Kan. cr., bbl.	1.55	1.55
Linseed oil, raw	76	73
Rapeseed oil, refined	1.05	1.05
Lard oil, prime	96	1.10
Fish oil, Menhaden, br.	55	55
Sulphuric acid, 60	2.00	3.00
Cyanide potash, lb.	..	..
Cottonseed oil, bbl.	10.35	10.98
Silk, raw, Japan	6.05	5.35
Silk, raw, Italy	6.25	6.40
Rubber, fine, up river, Para	74	71½
Tire, scrap	6½	5¾
Steel, open hearth, ton	45.00	45.00

FOREIGN TRADE OPPORTUNITIES.

(Address Bureau of Foreign and Domestic Commerce, Washington, D. C., Giving Number, Which Will Forward Correspondence, Unless Otherwise Stated.)

Wearing Apparel, Automobiles, Etc. No. 20,810—A commercial agent of the bureau writes that a business man from Ecuador, representing a New York commission house, is now in the United States for the purpose of establishing commercial relations with American manufacturers of wearing apparel, including hosiery and underwear, for men; shoes, candles, cutlery and hardware, cheap automobiles and small crude oil engines.

Automobiles, Hardware, Farm Implements, Etc. No. 20,827—The commercial attache of the Department of Commerce in Chile reports that a man in that country desires to represent American manufacturers of automobiles, hardware, general merchandise and farm implements. Reference is given.

Automobiles and Rubber Tires. No. 20,856—A man in the United States writes that his agent in Spain desires to represent American manufacturers of automobiles and rubber tires for carriages and automobiles.

Automobiles, Machinery, Etc. No. 20,920—An American consular officer in Spain reports that a business man in his district desires to represent American manufacturers of automobiles and accessories, drugs, colors and machinery. References are given. Correspondence may be in English.

Railway Cars and Supplies, Automobiles, Etc. No. 20,929—A commercial organization in the United States writes that a European iron and steel merchant has formed a partnership with an American citizen and desires to obtain exclusive agencies from American manufacturers of railway cars and supplies, automobiles and accessories, tools, bolts, nuts and screws, marine engines, flour and elevator machinery and steel rails. Agencies are desired for Belgium and the Netherlands. It is stated that all goods will be paid for on delivery in New York City. References are given.

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PYRENE $1000 WINDOW CONTEST.

Nation Wide Drive for Spring Business Among Distributors of Fire Extinguishers—Typical "Window Wallops."

The last 10 days of April, 1916, will long be remembered by the distributors of Pyrene fire extinguishers because it was then that the Pyrene Manufacturing Company's national window display contest was in force. In this contest the company not only offered liberal cash rewards for the best displays, but furnished the dealer with the material that would permit them to make effective display and offered suggestions for the manner of trimming.

The prize money offered aggregated $1000, and was divided as follows: First prize, $250; second, $100; third, $75; fourth, $50; fifth, $25, and $10 each for the next 50 best displays. The conditions attached were simply that the displays should be in the windows on the morning of April 20 and remain there for the succeeding 10 days, and that photographs of the displays be mailed to the Pyrene Manufacturing Company, 52 Vanderbilt avenue, New York City, not later than April 30, 1916. The awards were to be made by the company and its decisions were to be final.

The aid supplied by the company is illustrative of the wide scope and high efficiency of its dealers' aid organization. When a dealer orders at least a dozen Pyrene fire extinguishers the company sends a salesman to help display, demonstrate and sell them, and supplies a moving mechanical sign for the window, a liberal quantity of booklets, leaflets and other printed matter for distribution, a number of lantern slides to be shown in moving picture theatres, numerous cuts, electros and advertisements, a metal outdoor sign and a cloth banner, and from time to time sends window display suggestions and sales aids to increase the business in Pyrene fire extinguishers.

On this page is shown a group of window displays that were exhibited in two New England cities during the contest week, all of which are of high standard and are expected to figure among the prize winners.

AMBU WINS ARMOUR STUDENTS.

A highly prized indorsement of the Ambu trouble shooter has been received by the American Bureau of Engineering. Being written by one of the leading authorities in his particular field of work, the company feels that it should dispose of any doubts a motorist, repair or garage man may have entertained in regard to the device. The letter follows:

The American Bureau of Engineering,
1018-1024 So. Wabash Ave.,
Chicago, Ill.

Gentlemen:—

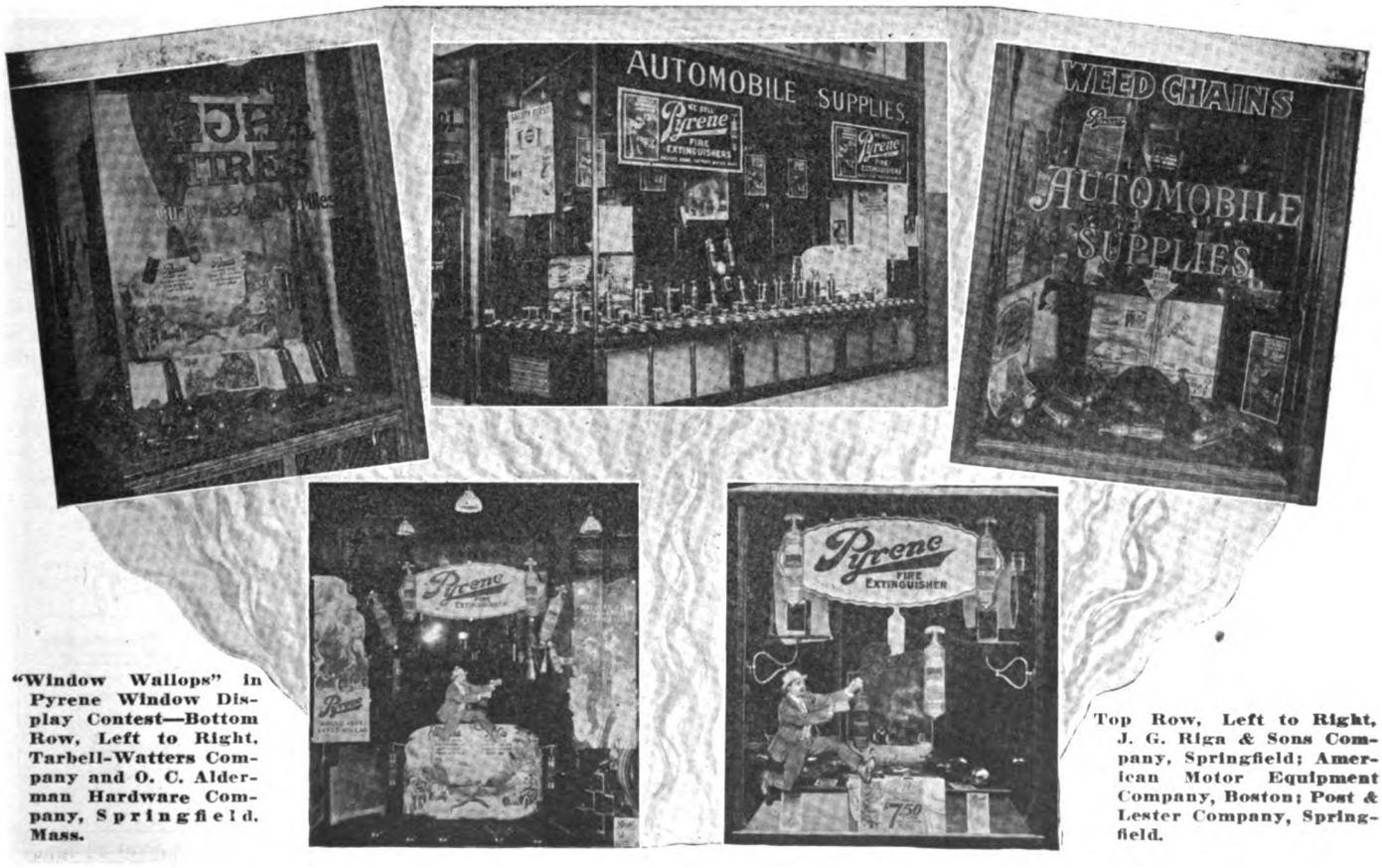
The Ambu Trouble Shooter, which you so kindly and promptly sent in response to my request of recent date, has created a great deal of interest among the students in the class on "Ignition, Starting and Lighting Systems" which I am conducting in the evening school here at Armour Institute of Technology.

I have personally given quite a bit of time to an investigation of this instrument, and appreciate the fact that the fundamental principles upon which it operates are old and tried, but the manner in which these principles are applied in this particular case are, indeed, very interesting and practical. A great many of the students had an idea that the instrument must be full of gears, springs, etc., in order that it accomplish all that it does, but were favorably impressed with the simplicity of its construction after I had explained its operation. I feel the instrument and its charts fills a long felt want on the part of the repair man, whether he be in the garage, service station or factory, to be able to quickly, accurately and systematically locate all kinds of trouble in connection with the electrical starting and lighting equipment of the motor car. The fact that no particular knowledge or experience is required to successfully handle the Ambu Trouble Shooter is in itself, in my opinion, of paramount importance, and also that a repair man can handle all of the various systems equally well makes his services a great deal more satisfactory and profitable to his employer. I have found the charts and directions for the various systems quite complete and they are put up in such a form that they may be easily followed by any one who can read, even though he has had no special school or practical electrical training.

I am glad to learn that you expect to keep pace with the rapid changes that are being made in the electrical equipment on the motor car, and will bring out, from time to time, additional charts and instructions in order to keep the instrument up-to-date.

Wishing you success in marketing this device, which I feel will easily prove its true worth if given a chance, I remain.

Most sincerely,
D. P. MONTOU,
Asso. Prof. of Elec. Eng.



"Window Wallops" in Pyrene Window Display Contest—Bottom Row, Left to Right, Tarbell-Watters Company and O. C. Alderman Hardware Company, Springfield, Mass.

Top Row, Left to Right, J. G. Riga & Sons Company, Springfield; American Motor Equipment Company, Boston; Post & Lester Company, Springfield.

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PRACTICAL MOTOR CAR REPAIRS IN THE GARAGE.

VALVE TOOL.

The tool for lifting valve springs shown in Fig. 1 is made from a discarded forked lever such as is commonly used

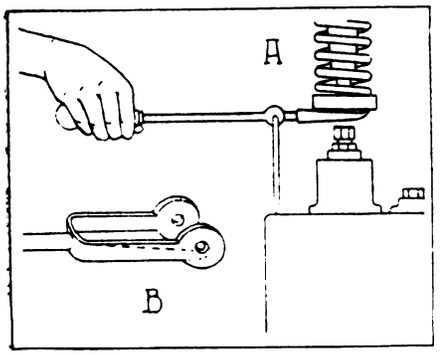

Fig. 1—A Simple Valve Tool Made of a Discarded Part.

for operating the brakes. The forked end was ground to form a point and about an inch above the rod was flattened and a small hole drilled through. A steel rod was then bent to a hook shape and one end was inserted in the hole. The other end was filed to a point. For convenience of operation a file handle can be fitted to the end of the tool.

IRON AND STEEL TEST.

To ascertain whether a pipe is made of steel or iron, cut off a short piece and suspend it in a solution consisting of nine parts water, three parts sulphuric acid and one part hydrochloric acid. This solution should be placed in a porcelain or glass vessel and the part should be suspended so that it does not touch bottom. After two or three hours' immersion, remove and rinse off the acid. If it is a steel pipe, the surface will be bright, solid and unbroken. On the other hand, if the pipe be of iron the surface will show faint ridges or rings, denoting the different layers of iron.

RUBBER CEMENT.

A simple formula for making rubber cement is as follows: Thoroughly mix eight fluid ounces of carbon bisulphide and 40 grains of rosin. To this mixture add one ounce of old rubber which has been cut into fine strips. The rosin and carbon bisulphide can be purchased at any chemists, while the rubber can be cut from the tread of a discarded tire or old inner tube. The only objectionable feature of this cement is the disagreeable odor, due to the presence of the carbon bisulphide.

THE METRIC SYSTEM.

The metric system of measurement has been legalized by this government for a number of years, but it has been seldom used by our mechanics. The European war has so greatly increased our foreign trade that it is desirable that everyone know something of the metric system.

This system is based on the meter, which was said to be one 10-millionth part of the earth's meridian, passing through Dunkirk and Formnetera. Experiments which followed later determined that this was not a true reckoning and that the meter exceeds one 10-millionth part by almost one part in 6400. In this country the value of the meter is authorized as 39.37 inches.

The meter is considered as the unit of length and multiples of this are expressed by adding the Greek words deka meaning 10, hekto 100 and kilo 1000. Divisions are obtained by adding the Latin words deci 1/10, centi 1/100 and milli 1/1000.

The accompanying table will serve as a quick reference for the equivalents of the metric measures of length:

Table of Equivalents.

10 millimeters (mm).....1 centimeter
10 centimeters (cm).....1 decimeter
10 decimeters (dm).....1 meter
10 meters (m).....1 dekameter
10 dekameters (dm).....1 hektometer
10 hektometers (hm).....1 kilometer
10 kilometers (km)..1 myriameter (mm)

Metric Values.

1 millimeter	0.03937 inches
1 centimeter	0.393 inches
1 decimeter	3.937 inches
1 meter	39.370 inches
1 dekameter	32.808 feet
1 hektometer	19.927 rods
1 kilometer	1093.61 yards
1 myriameter	6.213 miles

1 inch	2.54 cm.
1 foot	0.3048 m.
1 yard	0.9144 m.
1 rod	0.502 dm.
1 mile	1.609 km.

EXPELLING EXHAUST GASES.

A large Rhode Island repair shop in which the repair department is on the second floor, utilizes the arrangement shown in Fig. 2 for carrying the exhaust gases from machines to the open air. It consists of a large pipe arranged along the wall at one side of the room. Both ends of the pipe are open, one extending out at the rear of the building and the other terminating close to the wall inside the room. At the indoor open end is an electric fan such as is used for ordinary cooling purposes. This is connected with an electric light socket. Connectors are placed in the large pipe at equal distances and to these are attached flexible metal tubings which are of sufficient length and diameter to slip over the short pipe that extends from the ordinary exhaust muffler. Small hooks are inserted in the ends of the tubings so that they may be clamped to the muffler by ordinary coil springs.

The operation is simple. The car is placed so that rear is nearest the wall and the flexible tubing is then clamped to the muffler. When it is necessary to test the motor, the fan at the end of the large pipe is started. The exhaust gases

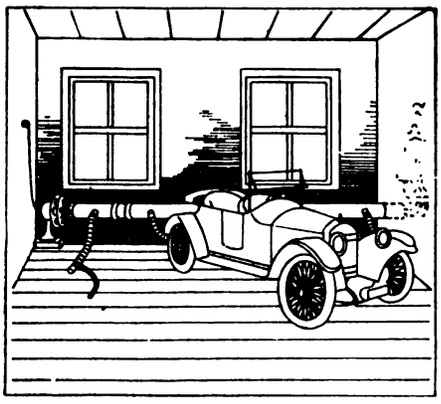

Fig. 2—Method of Preventing Exhaust Gases from Filling the Garage.

from the machine are carried through the muffler, through the flexible metal tubing and from there to the large pipe, and the air pressure generated by the fan then forces them into the air outside the building. When only one car is being tested, the openings in the flexible tubings not being used should be plugged to prevent the exhaust gases from entering the room by that avenue.

USING LATHE AS SHAPER.

A garage equipped with a lathe often has no milling machine or shaper, in which case much of the work accomplished by the latter machines can be done in the lathe if the following suggestion is adopted. A method of cutting a keyway in a shaft is illustrated in Fig. 3. Place the work on the centre of the machine. Remove all backlash of the work by placing leather wedges behind the dog in the face plate, and throw in the back gearing so as to prevent any movement. Lay a square nose finishing tool on its side on liners until it is accurately in alignment with the centres. It can be held in position by using a cross piece and two bolts. By working the carriage backward and forward by hand the tool may be fed in at each cut and in this manner a very neat keyway may be planed on the shaft.

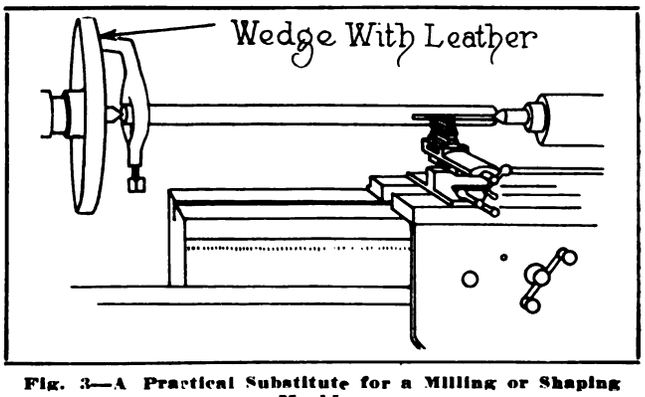

Fig. 3—A Practical Substitute for a Milling or Shaping Machine.

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PRESSING IN BALL RACES.

In many of the earlier makes of cars the ball races in the wheels are so tightly forced in that it is a difficult task to

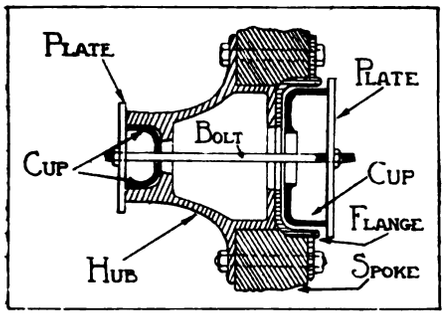

Fig. 4—Equipment for Pressing in Ball Races in Wheels.

remove them when worn. They are made of hardened pressed steel and if the member cannot be broken out with a cold chisel and hammer, it will, no doubt, be necessary to draw the temper. When fitting the new race care must be taken, if a hammer is used, to force the member in place, else breakage is apt to result. A much better method than hammering is suggested by the device illustrated in Fig. 4. It consists of a bolt threaded at both ends to take a nut and two quarter-inch metal plates. The operation is obvious. By tightening the nuts the race will be forced in straight, because an even pressure is brought to bear. This method may also be used for forcing in brass and bronze bushings when the usual driving method is apt to burn them.

WATER CONNECTION.

Frequently the rubber hose used to connect the lower opening of the radiator to the opening in the cylinder will become kinked and the free circulation of the water will be impeded. Many methods for remedying this condition have from time to time been explained in these columns. In Fig. 5 is shown a method suggested by a subscriber.

A short rubber hose is fastened to the lower pipe of the radiator and a second short length to the water intake pipe of the cylinder jacket. The two are then joined by a small iron elbow, such as is ordinarily used for making piping connections.

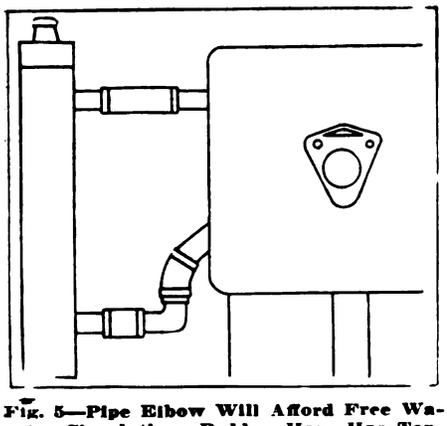

Fig. 5—Pipe Elbow Will Afford Free Water Circulation—Rubber Hose Has Tendency to Kink.

S. A. E. HORSEPOWER FORMULA.

The standard formula for computing the horsepower of the gasoline engine in this country is the one adopted by the Society of Automobile Engineers. The National Automobile Chamber of Commerce has also adopted it and it is now also known as the N. A. C. C. formula, it consists of squaring the bore, multiplying by the number of cylinders and dividing by 2.5.

The accompanying table will be of service in rapidly ascertaining the horsepower of four and six-cylinder motors, the bore being stated in both inches and millimeters:

Bore		Horsepower	
Inches	Millimeters	4-Cylinder	6-Cylinder
2.500	64	10.000	15.0000
2.625	68	11.000	16.5000
2.750	70	12.100	18.2000
2.875	73	13.250	19.8750
3.000	76	14.400	21.6000
3.125	79	15.625	23.4375
3.250	83	16.900	25.4000
3.375	85	18.250	27.4000
3.500	89	19.600	29.4000
3.625	92	20.250	31.6000
3.750	95	22.500	33.7500
3.875	99	24.000	36.0625
4.000	102	25.600	38.4000
4.125	105	27.250	40.9000
4.250	108	28.900	43.8000
4.375	111	30.625	45.9375
4.500	114	32.400	48.6000
4.625	118	34.350	51.6000
4.750	121	36.100	54.1000
4.875	124	38.000	57.0000
5.000	127	40.000	60.0000
5.125	130	42.000	63.0000
5.250	133	44.100	66.2000
5.375	137	46.000	69.1000
5.500	140	48.400	72.6000
5.625	143	50.625	75.9375
5.750	146	53.000	79.5000
5.875	149	55.250	82.9000
6.000	152	57.600	86.4000

REMOVING FROZEN TIRES.

Although car manufacturers often advise the removal of the shoes and the cleaning of the rims at regular intervals, this work is frequently neglected by the average motorist. When the shoe has been in continuous service for 2000 to 4000 miles and operated over wet and muddy roads, the task of removing it from the rim is apt to be difficult. The tool shown in Fig. 7A will greatly assist the operation when the condition stated above prevails. It consists of two hinged jaws operated by a threaded bolt and nut.

Two small wooden blocks, each being about three inches in length, are placed on either side of the deflated shoe and close to the rim. The jaws are placed behind the blocks and slowly compressed. The action gradually forces the bead of the shoe away from the metal so as to permit the insertion of the tire tool.

Having forced away one section, remove the tool and place one of the wooden blocks against the part of the tire still adhering, as illustrated at B. By striking it several sharp blows with a hammer, the part will gradually peal away from the rim. It is imperative that there be no sharp corners on the wooden blocks, as these are apt to cut into the rubber. Before replacing the tire, clean the rim and smear with graphite.

VALVE RACK.

Because it is essential that valves be replaced in the seats from which they were removed during the overhaul of the

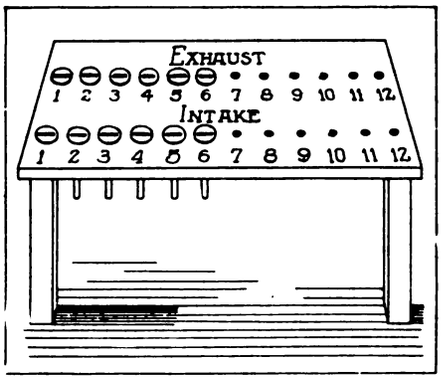

Fig. 6—Stand Prevents Disarrangement of Valves When Out of Motor.

engine, it is customary to place them on the work bench in the order of their removal. If they remain out of the motor for any length of time this system is not satisfactory because the order is apt to be disarranged, the faces of valves scratched, or some of the parts lost.

A much better plan is shown in Fig. 6. It consists of an ordinary wooden rack, which may be made a permanent fixture to the work bench or portable as desired. All that is required is the drilling of 24 holes, 12 in each row, to allow the insertion of the valve stems. One row is marked exhaust and the other intake. The openings in each row are marked from 1 to 12, each of these figures corresponding to the number of the cylinder from which each valve was taken. A rack of this type prevents complication, injury to faces and loss.

CLEANING ALUMINUM.

Turpentine is one of the best known agents for cleaning aluminum crank cases, floors and running boards. A soft cloth saturated with it will remove grease and dirt as easily as gasoline. The advantage of this solvent is that dirt and grease will not adhere so readily to the metal after it has been cleaned with the turpentine as it will when gasoline or kerosene has been used. The tendency is for the turpentine to afford a lacquered surface to aluminum.

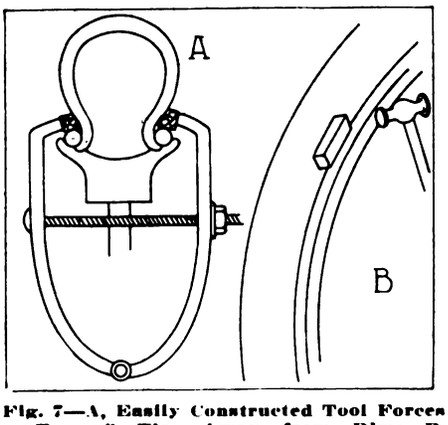

Fig. 7—A, Easily Constructed Tool Forces "Frozen" Tire Away from Rim; B, Wooden Block and Hammer Assist Operation.

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NEW BUILDING OPERATIONS.

Contracts Made and Plans Contemplated for Garages, Repair Shops and Service Stations.

In this department is presented a record from the various states of the plans and specifications in course of preparation by individuals and concerns, of the contracts awarded for the erection of new garages and the like, of additions, improvements and alterations either already made or under consideration, and of the business removals and new locations that have taken place within the past month.

Plans and Specifications Being Prepared.

Montgomery, Ala.; M. L. Griel; one-story garage; $6100.

Hartford, Conn.; Albert S. Cook; two-story garage, 35x50; $7000.

New Haven, Conn.; C. W. Murdock, 185 Church street; one-story garage, 40x116; $20,000. Lessee, Blue Ribbon Garage Company, Bridgeport, Conn.

Waterbury, Conn.; John A. Coe, 493 Willow street; one-story garage, 20x22; $500.

Waterbury, Conn.; D. F. Farrington, 111 W. Main street; one-story garage, 24x27; $1000.

Waterbury, Conn.; Frank Daly, 150 South Elm street; one-story garage, 18x26; $1500.

Waterbury, Conn.; F. F. Garrity, 185 Willow street; two-story garage, 30x40; $2500.

Warehouse Point, Conn.; J. J. Cahill; one-story garage, 82x49; $15,000.

Wilmington, Del.; L. W. Crawford, Odd Fellows' building; two-story garage, 120x120.

Wilmington, Del.; Arthur F. Porter, 1100 Rodney street; two-story garage, 20x30.

Washington, D. C.; Isaac T. Mann and W. Gordon Crawford; three-story reinforced concrete automobile building at 1128-30 Connecticut avenue, 65x120; $40,000.

Daytona, Fla.; S. B. Green; two-story garage, 84x110; concrete walls and floor, sheet metal roof, fireproof; $20,000.

Pensacola, Fla.; James Muldon; one-story fireproof garage, 50x100.

Macon, Ga.; McCord & Satterfield, agents for Ford Motor Company, purchased site, 104x208, on which to erect assembling plant and repair shop; $20,000.

Alton, Ill.; R. H. Levis; two-story garage, 68x99. Lessee, Hudson Phillips, 23rd and Locust streets, St. Louis, Mo.

Berwyn, Ill.; F. Petru, 1439 West 18th street; one-story garage, 22x30; $2000.

Chicago, Ill.; C. W. Stevens, 64 N. Randolph street; one-story garage, 20x25.

Chicago, Ill.; Charles Lott; one-story garage, 50x180.

Chicago, Ill.; Joyse Brothers; one-story garage, 49x122.

Chicago, Ill.; M. Johnson, 5015 Kenwood avenue; one-story garage, 20x45.

Chicago, Ill.; A. Cnalstrom, 1451 E. 53rd avenue; one-story garage, 21x30; $4000.

Chicago, Ill.; Dr. S. L. Friduss, 1809 W. 47th street; one-story garage, 22x24.

Chicago, Ill.; Engel & Forman, 2038 Division street; one-story garage, 50x125.

Chicago, Ill.; William Rudd & Co.; two-story garage, 100x200.

Chicago, Ill.; North Shore Storage Warehouse Company, 4825 Broadway; one-story garage, 50x160.

Chicago, Ill.; A. W. Harris, 4023 Kimbark avenue; two-story garage; $8000.

Chicago, Ill.; Ogden Automobile Sales and Garage Company (James Dvorak, president); 1909 South Lawndale avenue; one-story garage, 151x146.

Chicago, Ill.; B. J. Bruns, 2001 Irving Park boulevard; one-story garage, 18x20.

Chicago, Ill.; Robert M. Fair; three-story automobile service station, 80x180; $85,000.

Joliet, Ill.; William Adam; one-story garage, 27x130.

Moline, Ill.; R. C. Leedy, 1530 Fifth avenue; one-story private garage; $2500.

Oak Park, Ill.; G. M. Davidson, 211 N. East street; one-story garage, 25x33.

Flora, Ind.; Greider & Hockins; one-story garage, 60x122.

Gary, Ind.; A. R. Hoover, 416 W. Sixth street; one-story garage, 48x125; $2500.

Garrett, Ind.; S. D. Johnson & Sons; two-story garage, 50x150; $10,000.

Richmond, Ind.; John J. Steele, 909 Main street; two-story garage, 60x140; $25,000.

Valparaiso, Ind.; Charles F. Lembke; three-story commercial garage, 66x132; $15,000.

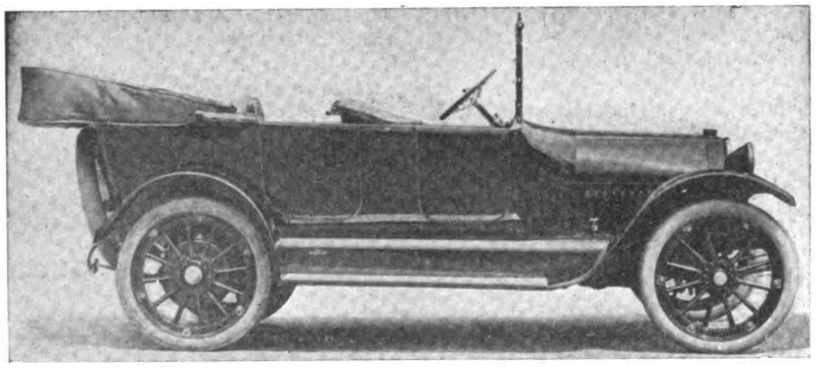
Cedar Rapids, Ia.; Charles B. Zalesky, 601 Security building; two-story garage, 62x124; $16,000; for G. W. Fry, Vinton, Ia.

Sioux City, Ia.; S. Carlson & Son, 1111 Fifth street; one-story garage, 50x80; $6000.

Waterloo, Ia.; T. J. O'Connell, 322 W. Fifth street; one-story garage, 80x80.

Orange City, Kan.; Bloom Brothers; one-story garage, 50x100; $10,000.

Pratt, Kan.; C. A. Hopper; one-story garage, 50x84; $3000.



The Seven-Passenger Studebaker 6-50, Manufactured by the Studebaker Corporation, Detroit, Mich., and Priced at $1050—Technical Description in The Automobile Journal, Feb. 25, 1916.

Motor, Six Cylinder, L Block.
Bore and Stroke, 3.875 by 5.000.
Horsepower (S. A. E.), 36.04.
Carburetor, Schebler.
Lubrication, Splash.
Clutch, Cone.
Cooling System, Pump.
Ignition, Single, Remy.
Starting, Lighting, Stude.-Wagner.
Rear Axle, Full Floating.
Tire Sizes, 34 by 4.
Wheelbase, 122 Inches.

Baltimore, Md.; Automobile Club of Maryland (H. M. Luzius, secretary); 12 West Mount Royal avenue; three-story hall and show room, 53x87; $50,000.

Baltimore, Md.; William Tudor, 2000 Raff street; one-story garage in rear 1112-20 E. 20th street; 44x18.

Baltimore, Md.; Wallace W. Kemp, 401 E. Olive street; two-story garage, 51x59; $10,000.

Emmitsburg, Md.; People's Garage (capital $15,000 and organized by J. Brooke Boyle, John M. Roddy, J. Stewart Annan and others); garage, 50x100; $7000.

Boston, Mass.; George Grow Automobile Company, 321 Columbus avenue; two-story garage, 192x100; $60,000.

Boston, Mass.; G. C. Morton, 77 Sucbury street; one-story garage, 30x25.

Boston, Mass.; David Huntley; three-story garage; $40,000.

Fall River, Mass.; George Mathieu, 351 Lindsey street; one-story garage, 46x99; $7000.

Holyoke, Mass.; Dydak Piekos, 111 Lyman street; two-story garage, 60x120; $20,000.

Holyoke, Mass.; K. R. Charlton, 243 Elm street; two-story garage; $40,000.

Longmeadow, Mass.; William H. Carpenter & Co., 36 Summer avenue, Springfield, Mass.; one-story garage, 62x80.

Randolph, Mass.; William B. Atherton, 36 Bromfield street, Boston; one-story garage, 50x65.

South Boston, Mass.; Arthur G. Jones, 568 Columbia road, Dorchester district; one-story garage, 165x65; $35,000.

Worcester, Mass.; A. Berkowitz, 5 Chapin street; one-story garage, 57x60; $20,000.

Flint, Mich.; Homer McBride, 300 Dryden building; two-story garage, 45x30; $10,000.

Pontiac, Mich.; Howard Fawcett, Buick agent; two-story garage and sales room, 50x208; $20,000.

Alden, Minn.; Daniel Hall; one-story commercial garage, 50x110; $5000.

Duluth, Minn.; A. C. Gillette, 2504 E. Sixth street; one-story garage; $2500.

Duluth, Minn.; William Wearne; one-story garage, 20x30; $1500.

Little Falls, Minn.; Burns & Macomber, 945 McKnight building, Minneapolis, Minn.; one-story garage, 50x115.

Madison, Minn.; T. C. Lee; one-story commercial garage, 66x100; $6000.

Minneapolis, Minn.; Harry B. Smith; one-story private garage, 22x24.

Jeffers, Minn.; Harrison & Soverson; one-story garage, 50x100; $6000.

Owatonna, Minn.; Zamboni & Son; two-story commercial garage; $9000.

Waseca, Minn.; Caster Brothers; one-story garage, 72x80.

Winona, Minn.; C. C. Miller; two-story commercial garage, 22x40; $10,000.

Kansas City, Mo.; George L. Brown, 1300 Rialto building; one-story garage, 80x100; $5000.

Kansas City, Mo.; Rahe Automobile Training School (H. J. Rahe, president); N. E. corner 11th and Locust streets; three big buildings and tractor farm.

St. Louis, Mo.; Fredonia Realty Company, 109 North Seventh street; two-story automobile sales room and shop, 50x122; $30,000. Lessee, Goodyear Tire and Rubber Company, 1909 Locust street.

Webb City, Mo.; W. R. Dunham, local representative for Overland Automobile Company; two-story brick garage and automobile sales room, 64x86; $10,000.

Manchester, N. H.; James Ried, 431 Granite street; one-story garage, 89x78; $35,000.

Atlantic City, N. J.; Dennis A. Gormley, 704 Atlantic avenue; one-story garage, 47x64.

Hoboken, N. J.; New York Live Poultry Company; one-story garage, 50x100; $4500.

Jersey City, N. J.; William J. Hamilton, 173-175 Glendenning avenue; one-story garage, 25x71; $3000.

Kearney, N. J.; Thomas Lloyd, 407 Devon street; one-story garage, 50x80; $5000.

Middletown, N. J.; John F. Tierney; two-story private garage and chauffeur's quarters, 31x28; $5000.

Albany, N. Y.; William Marx, 243 North.

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Lawrence street; one-story garage and show room; $3000.

Albany, N. Y.; L. Marx, 693 Morris street; one-story garage, 21x48; $3000.

Albany, N. Y.; William N. Kling, 928 Madison avenue; one-story garage; $1000.

Albany, N. Y.; H. Barnett, 244 South Pearl street; one-story garage, 21x72; $2000.

Brooklyn, N. Y.; A. J. Mami & Son, 490 Fulton street; one-story garage, 94x100; $18,000.

Brooklyn, N. Y.; James Gordon Brothers, 7505 Fifth avenue; one-story garage, 60x100; $12,000.

Brooklyn, N. Y.; H. & H. Garage Company, 652 Jefferson avenue; one-story garage, 50x104; $10,000.

Brooklyn, N. Y.; E. Edwards, 432 81st street; one-story garage; $5000.

Brooklyn, N. Y.; George Koster, 2436 Putnam avenue; one-story garage, 31x56; $2000.

Brooklyn, N. Y.; Lancastershire Realty Company, 44 Court street; one-story garage, 65x130.

Brooklyn, N. Y.; F. Yacanda, 129 36th street; one-story garage, 25x100; $8000.

Brooklyn, N. Y.; William R. Thomas, 1065 40th street; two-story garage, 38x99; $15,000.

Brooklyn, N. Y.; Levy & Baird, 44 Court street; two-story garage, 83x102; $20,000.

Brooklyn, N. Y.; De Witt C. Merithou, 206 Madison street; one-story garage, 20x100; $6000.

Corona, L. I., N. Y.; Frank Blair; one-story garage, 40x99; $5000.

Forest Hills, L. I., N. Y.; Cordmeyer Development Company; two-story garage, 20x47; $2500.

Flushing, L. I., N. Y.; Eugene Schoen, 106 East 19th street, New York City; two-story garage, 84x42.

Long Island City, L. I., N. Y.; Margaret Brust, 288 Eighth avenue; one-story garage, 21x90; $3800.

Middle Village, L. I., N. Y.; Charles Neuman, 1439 Metropolitan avenue; one-story garage, 31x92; $5000.

New York, N. Y.; Estate of Mary E. Pinchat, care Amos R. E. Pinchat, 60 Broadway; 12-story automobile service building, 100x148; $300,000.

New York, N. Y.; D. Levin, 834 East 15th street; one and two-story garage, 75x130; $15,000.

New York, N. Y.; C. Steele, 11 East 62nd street; three-story garage, 19x80; $20,000.

New York, N. Y.; Charles Weihl, Bay street and Williams avenue, City Island, N. Y.; five-story garage, 85x152; $50,000.

New York, N. Y.; Steinmetz Construction Company, 1416 Glover street; one-story garage, 100x99; $20,000.

Oneida, N. Y.; Coles Tool and Machine Company; one-story garage, 60x140; $16,000.

Rochester, N. Y.; E. P. Gaylord, 152 Lennox street; one-story garage, 20x24.

Syracuse, N. Y.; W. H. Bissell, 109 South State street; one-story garage, 60x75.

Syracuse, N. Y.; L. G. Leonard, Cahill building; one-story garage, 22x65; $8000.

Syracuse, N. Y.; John B. Vert, 311 W. Willow street; one-story garage, 60x45; $5000.

Syracuse, N. Y.; Syracuse Motor Car Company (David Grody, president); 235 West Genesse street; three-story public garage and service station, 50x80; $40,000.

Schenectady, N. Y.; Harry Andrews, 325 Clinton street; two-story garage, 24x33; $1500.

Schenectady, N. Y.; E. Ryan; two-story garage, 60x100; $6500.

Utica, N. Y.; Harry W. Roberts, 801 Broad street; two-story garage, 40x50; $5000.

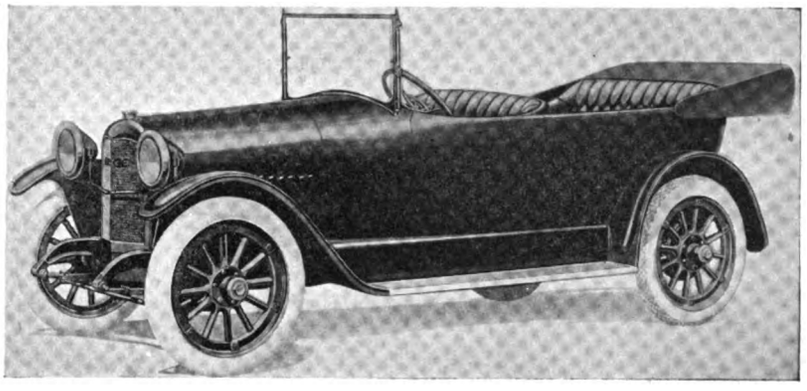
Asheville, N. C.; C. A. Rayser; fireproof garage, purchased site for $16,250. Lessee, John Lange.

High Point, N. C.; E. A. Bencini; two-story brick garage, 150x50.

Cleveland, O.; M. A. Hanna Company, 1250 Leader-News building; two-story garage, 116x116.

Cleveland, O.; Joel T. Hull, 1144 Parkwood drive; one-story garage, 20x20.

Cleveland, O.; Halle Brothers, corner Euclid avenue and E. 12th street; one-story garage; $20,000.



The Five-Passenger Paige-Detroit 6-38, Manufactured by the Paige-Detroit Motor Car Company, Detroit, Mich., and Priced at $1095—Technical Description in The Automobile Journal, Feb. 25, 1916.

Motor, Six Cylinder, L Block.
Bore and Stroke, 3¼ by 5.
Horsepower (S. A. E.), 23.5.
Carburetor, Stromberg.
Lubrication, Force Splash.
Clutch, Disc.
Cooling System, Pump.
Ignition, Single, Remy.
Starting and Lighting, Gray & Davis.
Rear Axle, Three-Quarter Floating.
Tire Sizes, 34 by 4.
Wheelbase, 117 Inches.

Cleveland, O.; City of Cleveland (Alexander Berstein, director of public service); one-story garage, 30x145.

Carrollton, O.; J. A. Wilkin; one-story garage, 40x80.

Cincinnati, O.; John Eggers 951-7 Curtis street; one-story garage, 52x106; $10,000.

Cincinnati, O.; J. H. Bauer, 516 Hale avenue; one-story garage, 24x28; $3000.

Cincinnati, O.; William A. Windisch, 210 Glenway avenue; 2½-story private garage, 23x47; $4500.

Cincinnati, O.; Henry Taselt, 1741 Hanfield street; one-story garage, 22x26; $3500.

Lima, O.; Dr. J. H. Battenberg, 128 South Union street; three-story garage, 50x200; $2500.

Mason, O.; Wayne Shurt; two-story garage, 30x70; $15,000.

Montpelier, O.; Stroth & Son; one-story garage, 76x132; $9000.

St. Bernard, O.; Frank Krehe, 4900 Carthage pike; one-story public garage, 50x120.

Allentown, Penn.; A. P. Anthony; one-story garage, 40x60; $2500.

Butler, Penn.; Kramer Brothers, 116 E. Wayne street; two-story garage, 48x184; $25,000.

Coaldale, Penn.; Michael Domin; two-story garage, 25x50; $5000.

Fleetwood, Penn.; Fleetwood Motor Company; one-story garage, 50x95.

Gettysburg, Penn.; George F. Everhart; three-story garage, 51x88; $20,000.

Lansford, Penn.; Thomas Prickett; two-story garage, 18x50; $1500.

Monongahela, Penn.; B. F. Forsythe; two-story commercial garage, 30x100; $25,000.

Philadelphia, Penn.; Dr. George Woodward, North American building; two-story garage, 14x31.

Philadelphia, Penn.; M. Edward Morton; one-story garage, 20x38.

Philadelphia, Penn.; E. P. Alexander, 414 N. Third street; one-story garage, 19x26.

Philadelphia, Penn.; Samuel M. Clements, Jr., West End Trust building; one-story garage, 21x35.

Philadelphia, Penn.; Joseph Schroeder, 540 North 52nd street; one-story garage, 42x82; wing, 70x70.

Philadelphia, Penn.; Jacob Kunz, 754 Borowse building; one-story garage, 30x80.

Philadelphia, Penn; John H. Irvin, 64th street and Drexel boulevard; 1½-story garage, 17x22.

Philadelphia, Penn.; T. J. Matthias, 319 South 52nd street; one-story garage, 35x55.

Pittsburg, Penn.; W. P. Lang; one-story private garage; $15,000.

Pittsburg, Penn.; E. F. Rusch; two-story private garage, 22x22; $5000.

Pittsburg, Penn.; Dr. J. J. Schill, 3709 Butler street; two-story garage, 46x105; $15,000.

Pottsville, Penn.; D. G. Youngling & Son; one-story garage, 36x25.

Reading, Penn.; W. E. Mumma; one-story garage, 18x20.

Reading, Penn.; Mrs. C. F. Yerty, rear 1105 Spruce street; two-story garage, 16x20.

Reading, Penn.; William H. Klein; one-story garage, 23x50.

Reading, Penn.; Charles W. Kirk; one-story garage, 14x16; rear 721 Mulberry street.

Reading, Penn.; Alvin R. Miller; one-story garage, 10x14; rear 1138 Mulberry street.

Spring Mills, Penn.; A. A. Garthwaite, Conshohocken, Penn.; two-story garage, 23x33.

West Homestead, Penn.; Mesta Machine Company, 1345 Oliver building, Pittsburg, Penn.; one-story garage, 55x84; $8000.

Newport, R. I.; Edwin Lash; one-story garage, 30x36; $8000.

Newport, R. I.; Robert Haire, 46 Church street; one-story garage, 35x60; $5000.

Alton Park, Tenn.; E. Van Winkle, Atlanta, Ga.; one-story frame motor truck assembling plant, 200x50.

Johnson City, Tenn.; Robert Burrow, Bristol, Tenn.; one-story automobile sales room and service station at Main and Market streets.

Memphis, Tenn.; Memphis Overland Company (Thomas H. Smart, president); three-story service station and sales room at corner Monroe and Lawrence streets.

Nashville, Tenn.; G. N. Hillman; brick garage, 96x165; concrete floor.

Nashville, Tenn.; W. W. Pahe; one-story fireproof garage; $55,000.

Union City, Tenn.; Reece Alexander; two-story brick garage, 32x120.

Danville, Va.; Epperson & Williams; 1½-story garage, 40x50; $3500.

Hopewell, Va.; City Point Motor Company (J. M. Williams, president); Petersburg, Va.; brick or stone garage, 50x110; $10,000.

Marlinton, W. Va.; J. L. Baxter; one-story concrete block garage, 48x60.

Parkersburg, W. Va.; James D. Cook, 206 Juliana street; two-story garage, 25x101; $8000.

Wheeling, W. Va.; T. A. Westmyer Auto Supply Company; two-story steel tile and concrete block garage; $6500.

Wheeling, W. Va.; Arthur Stifel & Sons, Fourth and Main streets; two-story garage, 25x75; $10,000.

Kaukauna, Wis.; Charles E. Raught; one-story garage, 25x22; $1500.

Milwaukee, Wis.; Barney Padway; one-story garage, 25x18.

Milwaukee, Wis.; Matthew Klenzendorff, 792 Third street; one-story garage, 70x116.

Milwaukee Wis.; S. F. Kadow, 988 Kinnikinnic avenue; two-story garage, 65x50.

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Contracts Awarded for New Buildings.

Huntsville, Ala.; L. J. Breed, brick garage on Jefferson street, 50x140; concrete floors, steam heat, hand power elevator; for W. T. Hutchens; $6000.

Denver, Col.; P. L. Hansen, 1471 South Pennsylvania street; one and two-story garage, 75x183; for Turner Commercial and Auto Equipment Company, 14th and Arapahoe streets; $25,000.

Denver, Col.; B. Rusenewsky; one-story garage, 48x77; for B. Bright, E. 29th avenue and Marion street; $3500.

New Haven, Conn.; David H. Clark Company, 166 Brewery street; one-story commercial garage, 50x150; for Beecher Realty Company, 831 Chapel street; $20,000.

New Haven, Conn.; William Paterson, 47 Orange street; one-story garage, 26x34; for Charles S. Palmer, 189 Church street.

New London, Conn.; J. A. Dolan & Co., Manwaring building; one-story garage, 40x80; for A. B. Collins, 569 Bank street; $15,000.

Thompsonville, Conn.; Northern Connecticut Light and Power Company; one-story commercial garage, 45x50; $10,000.

Washington, D. C.; P. J. Nee, Seventh and 11th streets, N. W.; one-story garage, 24x50; $3500.

Washington, D. C.; Frank L. Wagner, 1413 H. street, N. W.; two-story garage, 42x62; for J. W. Lee & Sons, 332 Pennsylvania avenue; $10,000.

Jacksonville, Fla.; Turner Construction Company; brick garage, 30x125; for J. M. Muldon. Lessee, Chittenden Garage Company, organized with W. A. Rawls, president and general manager, and A. M. Chittenden, secretary and treasurer.

Miami, Fla.; R. F. Archibald; one-story garage, 80x45; interlocking tile; for C. F. Sulzer; $4000.

Atlanta, Ga.; Mackle Construction Company; four-story automobile building, 100x130; for Mrs. Kelly Evans; $90,000. Lessee, Springfield Tire Company and J. W. Goldsmith, Jr., distributor of Hudson automobiles.

Macon, Ga.; Richard F. Willingham; one-story garage; $7500.

Chicago, Ill.; J. Mortenson, 5625 Princeton avenue; one and two-story garage; $3000.

Chicago, Ill.; W. J. Scrown Building Company, 36 West Randolph street; one-story garage, 40x30; for Schillo Brothers, 1780 Elston street.

Chicago, Ill.; W. A. Pillinger Company, 11 South La Salle street; one-story garage for Western News Company, 316 Whiting street; $8000.

Chicago, Ill.; Charles Zretz, 4835 N. Kenmore avenue; one-story garage, 22x32; $1200.

Chicago Heights, Ill.; Joe Pressendo, 1605 East End avenue; one-story garage, 50x125; for Gottschalk & Son, 1603 Aberdeen street; $10,000.

Chicago, Ill.; O. G. Temmen, 65 E. 28th street; one-story garage, 75x120; $11,000.

Greenville, Ill.; Snyder & Montgomery, Middletown, Ill.; one-story garage for B. F. Marbold; $7000.

Oak Park, Ill.; C. W. Seabury, 420 N. Euclid avenue; one-story garage, 35x24.

Sioux City, Ia.; L. A. Sturns; one-story garage, 50x125; $7000.

Sioux City, Ia.; B. E. Short, 422 Court street; one-story garage, 50x80; for S. Carlson & Sons, 111 Fifth street; $6000.

Solon, Ia.; Western Construction Company, Iowa City, Ia.; one-story garage for Frederick Zenichek; $2500.

Valley Junction, Ia.; Edward Rigler; one-story garage, 50x100; for Valley Automobile Company; $8000.

Great Bend, Kan.; Sharp Brothers, Eldorado, Kan.; one-story garage, 50x120; for Butler & Rogers; $8000.

Newport, Ky.; J. G. Cooper, 711 Traction building, Cincinnati, O.; two-story public garage, 86x100; for E. Keetenacker; $20,000.

Baltimore, Md.; Thomas Mullan, 4001 Greenmount avenue; one-story garage for J. K. Myerly, 610 E. 41st street; $1000.

Baltimore, Md.; Benjamin F. Bennett Building Company, 123 S. Howard street; four-story garage, 48x130; for J. Wilson Leakin, Fidelity building; $75,000. Lessee, Auto Car and Sales Company.

Cambridge, Mass.; F. O. White Construction Company, 183 River street; one-story garage, 60x100, and wing, 13x35; for Martin & Freethy, 141 Milk street, Boston.

Brockton, Mass.; T. F. Crowell, 19 South street; one-story public garage, 45x100; for V. E. Squires, 41 Grant avenue; $8000.

Holyoke, Mass.; D. O'Conneer Sons Company, 480 Hampden street; one-story garage, 45x25; for John B. Shea, 693 Dwight street; $3500.

Springfield, Mass.; Hoggson Brothers, 485 Fifth avenue, New York; one-story garage, 68x32; for W. H. Wesson; $9000.

Springfield, Mass.; E. W. Shattuck, 12 Cass street; one-story garage, 32x26; for Howard L. Kinsman, 43 Maplewood terrace; $2500.

Springfield, Mass.; Old South Realty Trust, 318 Main street; one-story garage, 42x70; $7000.

Worcester, Mass.; George W. Carr Company, 518 Main street; one-story garage, 25x38; for John Legg, 28 South Lennox street; $6000.

Springfield, Mo.; Will F. Pauly; one-story garage, 50x200; for Guy Mace and G. H. Haskett.

St. Louis, Mo.; Haesseler Building and Construction Company; two-story garage; for Krey Packing Company; $18,000.

St. Louis, Mo.; Duffner & Co.; automobile show room, fireproof, 75 foot frontage, plate glass front, terra cotta; for Easton-Taylor Trust Company; $75,000.

Omaha, Neb.; Omaha Van and Storage Company; one-story garage, 50x144; $8000.

Omaha, Neb.; L. D. Willis, 1119 City National Bank building; one-story garage, 45x103; $8000.

Jersey City, N. J.; A. W. Crone & Sons, 500 Central avenue; one-story garage, 75x100; for Edward Gleckenstein Sons, 114 Griffith street; $8000.

Paterson, N. J.; Albert Frederici, 369 Market street; one-story garage; for Dario Alexander, 788 E. 15th street; $3500.

Hudson, N. Y.; Fulton Brothers, 58-60 Morton avenue, Albany, N. Y.; two-story public garage, 120x50; for Crescent Garage (H. S. Mellano, president and A. Coon, secretary); $25,000.

Syracuse, N. Y.; James Howell; one-story garage, 22x66; for Mrs. Charlotte Leonard, 416 W. Onondaga street; $2000.

Albemarle, N. C.; A. F. Biles and R. L. Smith; garage, 45x210; $7000.

Salisbury, N. C.; C. R. Propst; automobile building, two-story, 64x174, and one-story, 60x194; for R. L. Mahalley Livery, Sales and Motor Company, 120 West Ennis street; $20,000.

Cincinnati, O.; John Eggers; one-story garage, 52x106; $10,000.

Cleveland, O.; Paul Brothers Company, 615 Citizens building; one-story garage, 41x53; for Standard Brewing Company; $5300.

Ada, Okla.; J. C. Ray; brick garage, repair and machine shop, 50x100; for Ford & Roberts, Box 602.

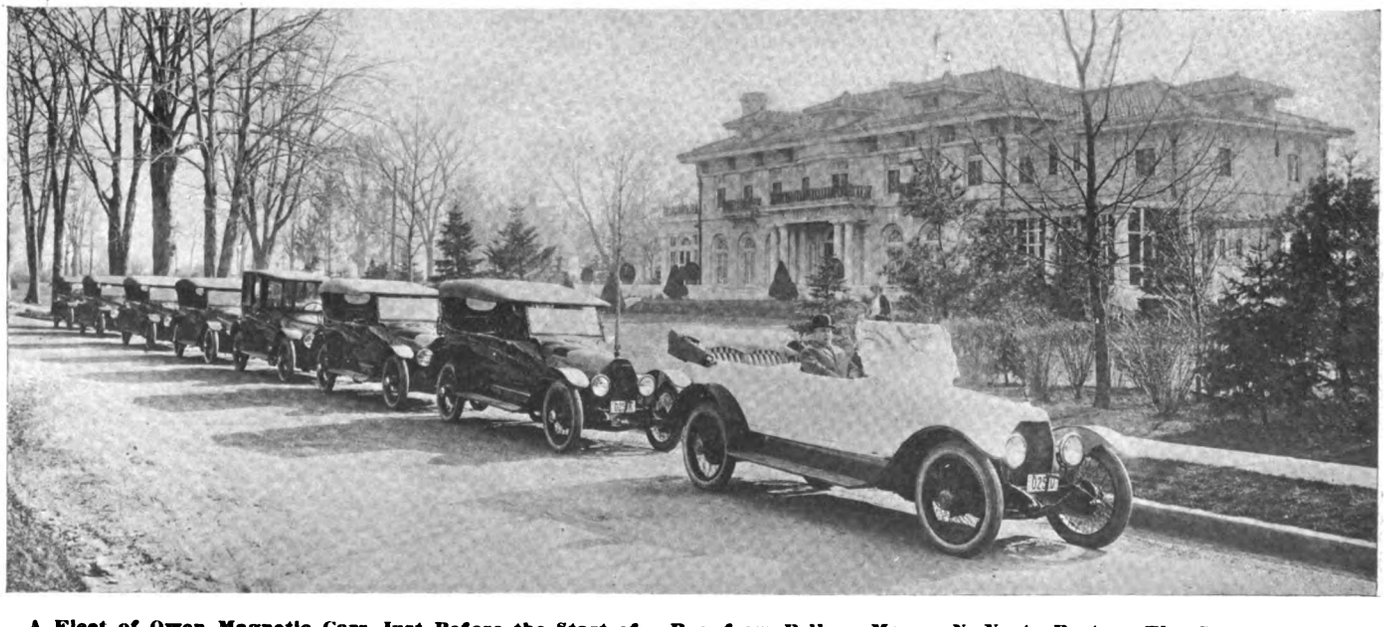
Philadelphia, Penn.; A. P. Lucker; one-story brick garage, 21x60, north side of Viola street, west of 50th street; for Louis Effenberg; $1145.

Philadelphia, Penn.; Rush Brothers; one-story brick garage, 17.6x50; at 1105 Arratt street; $1100.

Philadelphia, Penn.; E. Adler; one-story garage, 16x22; at 1530 Flora street; for T. H. Van Naman.

Philadelphia, Penn.; Louis Wagner; one-story garage, 16x35; at 3113 N. 16th street; $5000.

Philadelphia, Penn.; M. Moister; one-story garage, iron on frame, at 4714 N.



A Fleet of Owen Magnetic Cars Just Before the Start of a Run from Pelham Manor, N. Y., to Boston—The Cars Represent One Day's Delivery to M. F. Chase, the Boston Agent, and a Total Value of $30,000—In the Background Is the Home of R. M. Owen, After Whom the Cars Are Named and Who Is Active in the Production of the Baker R & L Company.

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Knox Tractor with a Steel Girder 60 Feet in Length and Weighing 31,000 Pounds, Which Was Hauled 3.2 Miles in 18 Minutes.

Broad street; for L. L. Rodenhausen; $1425.

Philadelphia, Penn.; James Johnston, 1721 Ludlow street; four-story garage, 68x110; for L. A. Scott, Witherspoon building; $45,000.

Philadelphia, Penn.; E. A. Heffner, 636 Jefferson street; one-story garage, 17x10; for H. E. Ziegler, 6302 Moylan street.

Philadelphia, Penn.; Charles T. Ely; two-story frame garage, 30x32; west side Harschel road, north of Cemetery lane; for G. W. Mackenzie; $2400.

Philadelphia, Penn.; M. W. Young; one-story brick garage, 22x24; at 358 Sherwood road; for Leon S. Dexter; $1500.

Philadelphia, Penn.; H. A. Leister; one-story brick garage, 20x40, at 3546 N. Seventh street; for Warren M. Koons; $800.

Philadelphia, Penn.; John E. Walt; one-story garage, 14.9x21.8, at west side Crefeldt street, south of Abington avenue; for Dr. George Woodward; $1100.

Philadelphia, Penn.; John H. McClatchy; one-story stone garage, 10x14; at 426 W. Carpenter street; $500.

Philadelphia, Penn.; A. L. Fretz & Son; two-story stone garage, at 6371 Drexel road; for J. H. Irwin; $25,000.

Philadelphia, Penn.; Eugene Towrison; brick garage, 18x25; at northwest corner 35th and Pearl street; for E. P. Alexander; $1500.

Reading, Penn.; Hauft & Rent, Wyomissing, Penn.; one-story garage, 20x26; for John Ennis, 1428 Muhlennberg street.

Wilkes-Barre, Penn.; Schmitt & Company, 180 N. Pennsylvania avenue; one-story garage, 33x40; for I. Saba; $3000.

Williamsport, Penn.; A. C. Everhart, 216 Locust street; two-story garage, 60x100; for La France Company, Elmira, N. Y.; $25,000.

Providence, R. I.; Grenier & Dionne, 18 Fairfield avenue; one-story garage, for Isaac Marinsky; $3000.

Newport News, Va.; R. V. Richardson; one-story brick garage, 50x128; for W. R. Charkleford; $8000.

Newport News, Va.; C. Taylor Holtzclaw, Hampton, Va.; one-story brick garage, 75x95; for John B. Kimberly, Old Point, Va.; $9300.

Norfolk, Va.; J. M. Harris; one-story brick assembling plant, gravel roof; for Winston Parrish and E. Thompson, Jr. Lessee, Ford Motor Company, Detroit, Mich.

Alterations, Improvements and Additions.

Riverside, Cal.; A. A. Gamble is erecting a $10,000 addition to his Fairmount Garage on Seventh street.

Jacksonville, Ill.; R. T. Cassell has enlarged his South Church Street Garage so as to have greater storage space.

Blanchard, Ia.; The Joy Auto Company is building an addition to its garage in order to handle the increasing business.

Linden, Ia.; The Wigton Garage is being enlarged and modernized to meet the demands of business.

Marblehead, Mass; The White Garage has broken ground for an addition on Atlantic avenue.

Weeping Water, Neb.; The Taylor Automobile Company is increasing the capacity of its garage to accommodate a growth of business. A large shop is being added at the rear of the building.

Rochester, N. Y.; The Rochester Taxicab Company, Clinton avenue, is planing to erect a new three-story addition to its garage. It will be of brick and fireproof and will cost $20,000.

Brownville, Penn.; The Water Street Garage and Machine Company will erect an addition and make improvements to its garage at a cost of $6000.

Hanover, Penn.; John L. Shaffer has converted the large stable at the rear of his residence on York street into a garage.

New Castle, Penn.; Turner Brothers' Garage, at the corner of North Liberty street, is to be greatly enlarged by the erection of a large addition.

Philadelphia, Penn.; Lit Brothers will make alterations to their garage at 20th street and Washington avenue.

Spokane, Wash.; H. L. Olive Company plans the construction of a large addition which will give a total floor space of 36,750 square feet. They are the distributors of the Overland.

Fairmount, W. Va.; The Fairmount Vulcanizing Company has completed an addition to its garage.

New Business Locations and Removals.

Los Angeles, Cal.; The Echo Garage is now located in a fireproof brick building recently completed on Sunset boulevard.

San Diego, Cal.; Mead Cornell, Republic and Hendric tire distributor, will be located at 311 West Broadway, San Diego Hotel building.

Jacksonville, Fla.; Portage Tire Company will move into its new home at West Adams street.

Cairo, Ill.; The Stelzer Auto Company has moved to 3601 Sycamore street, where Hudson cars will be represented.

Chicago, Ill.; The Hill Pump Valve Company has moved into its new factory at Archer avenue, Canal and 23rd streets. The company has floor space of 14,000 square feet. They are the manufacturers of the Utility line, consisting of the Utility automobile wrenches, pumps and heaters.

Freeport, Ill; Frank T. Rankin, Overland distributor, is now located at 222 Van Buren street.

Indianapolis, Ind.; The Butler Manufacturing Company will have its new plant at 1120 East Georgia street.

Hutchinson, Kan.; The Oliphant Motor Company is to be located in the new garage building at Avenue A, east, near the corner of Walnut street.

Baltimore, Md.; H. C. Clark has relocated at 1014 Morton street. He has the state agency for both the Master carburetor and Safety vulcanizer.

Baltimore, Md.; Eugene I. Rosenfeld & Co., Inc., is now located on Baltimore street, near Eutaw. The firm is the state distributor of the Genemotor starting and lighting system for Ford cars.

Boston, Mass.; George Collins, accessory dealer, has moved from 284A Columbus avenue to 225 Columbus avenue.

Boston, Mass.; J. A. Sukman has moved his vulcanizing plant to 38 Tennyson street.

Detroit, Mich.; The L. J. Robinson Company, Chalmers distributor, is now located in its new fine headquarters at Woodward avenue and Edmund place.

Grand Rapids, Mich.; The Miller Tire Company will have its new headquarters at 285 Bridge street.

Kalamazoo, Mich.; Lang & Paul, Chevrolet dealers, have taken new quarters on Kalamazoo avenue.

Omaha, Neb.; A. J. P. Bertschy is now located in the Armory building, where he has larger quarters to handle his increasing business.

Hoboken, N. J.; Hoboken Garage Manufacturing Company, 53 14th street, has moved to larger quarters at 74 Bloomfield street. The company manufactures homes for autos, either permanent or portable.

Newark, N. J.; Gale, Wertz & Co., dealer in used cars, is now located at 350 Halsey street.

New York, N. Y.; The McGraw Tire and Rubber Company will be located at 1886 Broadway.

Columbus, O.; The G-M Service and Specialty Company has moved from its former location, 275 North Fourth street, to 179 East Naghten street.

Dayton, O.; The Atlas Garage and Sales Company will move to a larger building adjacent to its present quarters at 330 South Jefferson street.

Dayton, O.; The Dayton Rubber Manufacturing Company is now located at 1764 Broadway.

Easton, Penn.; Samuel H. Kunkle will erect a new garage on Walnut street. It will be two stories high and modern throughout.

Providence, R. I.; The Enger Motor Sales Company, distributors for Enger cars, will be located at 931 Broad street.

Milwaukee, Wis.; The Lisbon Avenue Rubber Works, located at 4607 Lisbon avenue, has opened a branch at 660 Third street.

Factories Garages and Repair Shops.

San Bernardino, Cal; Bausch & Fouch are erecting one of the largest garage buildings on the Pacific coast, on E street, between Second and Third.

Bridgeport, Conn.; Isador Rivkin is planning to erect a new modern garage on Fairfield avenue.

Chicago, Ill.; Rowe, Young & Cooley, 3937 Washington boulevard, are erecting a new four-story building in the rear of their present establishment. They are the exclusive agents for Westcott cars in Chicago and central Illinois.

Fisher, Ill.; Gilmore & Kidd have under construction a new garage 75 by 100 feet, of brick and concrete. It will be used as sales room and storage department.

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Morrison, Ill.; Flikkema Brothers will erect a new modern garage on property recently purchased by them on West Main street.

College Springs, Ia.; J. E. Gibson is building a new garage of concrete blocks, 44 by 80 feet.

Decorah, Ia.; Gust E. Haugen is building a new garage on Water street.

Des Moines, Ia.; Lowell Chamberlain is erecting a new garage on Grand avenue to be occupied by Reno W. Trego and Nick Glassoo.

Hamburg, Ia.; Clifford Hood will open a garage.

Sioux City, Ia.; S. Carlson & Son are building a new garage at Fifth and Court streets at a cost of $6000.

Wilton, Ia.; Arthur Hucke is opening a new garage.

Baltimore, Md.; W. W. Kemp will erect a new two-story brick garage at a cost of $11,000 at 1422 Belvidere avenue.

Hagerstown, Md.; E. R. Sisk will open a garage.

Brookline, Mass.; Christine E. Flynn is erecting a new up-to-date garage on St. Paul street.

Lee, Mass.; James T. Owens has purchased land in the rear of Park building and will erect a new cement garage. The building has been leased by R. B. Benjamin, owner of the Park Garage.

Plymouth, Mass.; W. C. Chandler is planning to erect a new garage near Main street. It will be one-story, built of concrete and 80 by 80 feet.

Williamstown, Mass.; Henry N. Teagle will erect a new garage.

Ann Arbor, Mich.; William P. Flynn will open a service station and garage.

Calumet, Mich.; Paul Clare will open a garage on Third street.

Detroit, Mich.; The Grasser Motor Car Company, Hupmobile distributors, will erect a new building to handle the Hupp line of cars at 1395 Woodward avenue.

Grand Rapids, Mich.; E. P. Meed will build a large garage on Madison avenue, between Delaware and Highland streets.

Holland, Mich.; Hermanus Boone is planning to erect a new two-story brick and tile garage at a cost of $7000.

St. Johns, Mich.; E. H. Osgood, Overland agent, is putting up a new garage.

Stockbridge, Mich.; W. G. Reeves will erect a modern garage, two stories, 58 by 110 feet, to care for the Ford agency.

Thief River Falls, Minn.; Rasmussen Brothers will build a new garage. It will cost about $10,000. A. C. Rasmussen and C. E. Rossman are the members of the new firm. They will handle the Reo car.

St. Paul, Minn.; L. M. Hick will erect a garage and store room at Sixth and Exchange streets to cost $17,000.

Winona, Minn.; C. C. Miller is erecting a garage on Second and Johnson streets.

Elizabeth, N. J.; L. F. Hersh & Brothers will erect a storage and garage building at a cost of $8000, to be located at 81 W. Grand street. The Elizabeth Auto Company will occupy the garage.

Madison, N. J.; Samuel A. Gruver will erect a modern garage.

Buffalo, N. Y.; The Pierce-Arrow Motor Car Company will erect an addition to its plant at 1695 Elmwood avenue at a cost of $100,000.

Buffalo, N. Y.; The Overland Buffalo Company will erect a new building at the northwest corner of Main and Bryant streets.

Chaumont, N. Y.; Dayton E. Hilts and C. Edward Fish are preparing to erect a new fireproof garage in Water street. It will have capacity for 12 or 15 cars.

Hudson, N. Y.; Robert W. Evans will erect an up-to-date garage on Diamond street.

New York, N. Y.; G. Boymann, 215 W. 64th street, will erect a two-story garage on 64th street, near Amsterdam avenue.

New York, N. Y.; The Bush Terminal Company, 100 Broad street, will erect a new one-story brick garage on First avenue to cost $15,000.

New York, N. Y.; The Concourse Improvement Company, 869 West 167th street, will erect a one-story garage on Jumel place to cost $20,000.

New York, N. Y.; Harold B. Tether of 1416 Franklin avenue, will erect a one-story garage at 170th street.

Erie, Penn.; Jacob Roth, auto dealer, will erect a new two-story brick and steel modern garage to cost $6000. It will be located near 12th street.

Pittsburg, Penn.; Dr. J. J. Schill, 3790 Butler street, will erect a new large commercial garage at a cost of $15,000.

York, Penn.; Frank W. Neuman, 821 East Market street, is erecting a one-story frame building to be used as a tire vulcanizing shop.

Aberdeen, S. D.; The Spaulding Automobile Company will erect a new building adjoining its garage on South Lincoln street.

Chattanooga, Tenn.; E. M. Prigmore is erecting a new garage and store rooms on Chestnut street.

Memphis, Tenn.; The Memphis Overland Company will erect a large building on Monroe avenue.

Memphis, Tenn.; The Tire and Vulcanizing Company will have a large new home at Dudley street and Union avenue.

Goshen, Va.; The Miller-Lillich Company, Fort Wayne, Ind., will build a $50,000 plant for the manufacture of automobile accessories.

La Crosse, Wis.; J. S. Erenz will erect a large garage and office building on South Fourth street. The building will be occupied by the Rybolt-Weihaupt Auto Company.

Milwaukee, Wis.; H. R. Graham will erect a new garage to cost $10,000 at Hopkin road.

NEWLY INCORPORATED CONCERNS.

Monthly Record of New Business Houses that Have Been Chartered in Various States.

This department is an important summary of the concerns which have received charters in the various states to conduct businesses that have direct relation with the motor vehicle industry. In each instance the amount of capitalization is given, when such information is available, the names of the individual incorporators and the nature of the business to be conducted.

Accessories, Equipment and Supplies.

Denver, Col.; Peters, Tucker, Hay Rubber Company; $10,000; to sell tires; Harry G. Peters, E. M. Tucker, R. E. Hay.

Orlando, Fla.; United States Shock Absorber Company; $100,000.

Chicago, Ill.; Automatic Carburetor; $150,000; to deal in electrical and automobile supplies.

Chicago, Ill.; Quick Tire Service Company; $5000; to manufacture and deal in and repair motor cars and accessories; T. P. Edwards, A. F. Miller, E. F. Miller.

Indianapolis, Ind.; Acme Specialty Company; $10,000; to deal in auto specialties; W. F. Hiatt, D. M. Morone, J. P. Pine.

Mt. Vernon, Ind.; Lichenberger Sales Company; $6500; to buy and sell motor car accessories; E. S. Lichtenberger, H. S. Lichtenberger, J. A. Sprowl, J. O. Sprowl, C. O. Sprowl.

Louisville, Ky.; Louisville Tire Company; $5000; Aaron Kern, Ruby B. Kern, A. A. Erickson.

Louisville, Ky.; White Tire Company; $10,000; Charles Dobbs, B. H. Plaskett, Emil Van Allman.

Boston, Mass.; North Broad street Supply Company; $10,000; E. Barton Chapin, Richard Mortimer, Jr., Harriette I. Carr.

Adrian, Mich.; United Electrical Manufacturing Company; $50,000; to make electric horns and other electrical goods; D. B. Hayes, K. F. Wagner, Walter Haley, E. J. Wagner.

Detroit, Mich.; Detroit Accessories; $25,000.

Detroit, Mich.; Droford Starter Company; $5000; to make and deal in motor car accessories; E. W. Mulford, F. H. Tighe.

Detroit, Mich.; U. S. Auto Supply Stores Company; $50,000; A. M. Symonds, O. W. Konzelman, Bert Servis.

Minneapolis, Minn.; Nonpareil Oil Company; $50,000; Harry Loomis, Ross Larson, H. P. Keller, H. L. Dunn.

Newark, N. J.; Dayton Tire Company; $10,000; to deal in automobile tires and accessories; Nathan Schwartz, Fred D. Ransley, I. G. Farmer.

Buffalo, N. Y.; The Battery and Starter Company, Inc.; $10,000; to manufacture electric accessories for automobiles, batteries; Edwin F. Miller, Walter R. Levine and John B. Rodgers.

New York, N. Y.; R. and O. Tire Company; $2000; to manufacture all kinds of tires; Charles W. Rehermann.

New York, N. Y.; Equipment Holding Company, Inc.; $1000; to manufacture equipment for aeroplanes; Lester Kafer, Percival Wilds, Alexandria W. Jack.

New York, N. Y.; E-Z-On Fastner Company; $50,000; to manufacture auto accessories of all kinds; S. H. Harris, E. Benan.

New York, N. Y.; Newman Auto Signal Company, Inc.; $100,000; to manufacture auto supplies and accessories; M. Kjiback, A. Yuzzolino, E. Trotta.

Syracuse, N. Y.; Smith Wheel, Inc.; $100,000; to manufacture machinery, accessories and supplies for trucks; B. L. Smith, A. H. Trotter, L. P. Smith.

Canton, O.; Young Auto Supply Company; $20,000; to deal in motor car supplies; G. A. Young, H. E. Young, Carrie W. Young, W. S. Shester, J. McIlwain.

Cincinnati, O.; The Magic Auto Cleaner Company; $10,000; Christopher Fubk.

Newly Organized Manufacturers of Cars.

Dover, Del.; Standard Car Construction Company; $1,000,000; to manufacture and deal in and with motor cars and trucks; F. R. Hansell, George H. B. Martin.

Jacksonville, Fla.; Mackay Auto Line Company; $10,000; to manufacture and sell autos and auto parts; George W. Pettingell, president.

Chicago, Ill.; The Erwin Greer Automobile Company; $100,000; to manufacture and sell automobiles and accessories.

Kankakee, Ill.; Chiniquy & Parker; $25,000; to manufacture the Kankakee motor car; O. L. Chiniquy, R. L. Chiniquy, R. E. Parker.

Augusta, Me.; Lombard Pump and Motor Company; $150,000; to carry on a general manufacturing and mercantile business; president, R. S. Buzzell; treasurer, L. J. Coleman; clerk, C. L. Andrews; E. B. Turner, E. M. Leavitt.

Camden, N. J.; Pezzetti Corporation; $125,000; to manufacture wagons and automobiles; Henry Pezzetti, John J. Conway, Nichola Squillace.

Newark, N. J.; Yellow Taxi Company; $25,000; to manufacture and deal in automobiles; Florence Thompson, Phillip D. Elliot, Edwin G. Adams.

Marion, N. Y.; Lovelace Engineering Company; to manufacture automobiles, aeroplanes, engines and farm tractors.

New York, N. Y.; The Shiffer Patents Corporation; $100,000; manufacture of motorettes, side cars, motor carts and gears.

New York, N. Y.; Sphinx Motor Car Company; $1,500,000; to manufacture and deal in automobiles.

New York, N. Y.; Union Truck Manufacturing Company; $150,000; to manufacture various kinds of motors, cars and

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autos and also to conduct a garage; A. Marshall, M. P. Winne, F. C. Simmons.

Philadelphia, Penn.; The Rogers-Sargent Motor Company; $25,000; to manufacture automobiles; Herbert E. Latter, Norman P. Coffin, Clement M. Enger.

Parts and Fittings Makers Incorporated.

Mobile, Ala.; Universal Commutator Company; $30,000; to manufacture and sell a certain patented mechanical device for automobiles, known as the commutator or timer; E. B. Marshall, president; W. C. Baumhauer, Sr., vice president; A. M. Jackson, secretary; W. A. Dozier.

Dover, Del.; Automatic Transmission Company; $1,500,000; to manufacture engines for automobiles; Scott S. Baker, Clarence H. Jacobs, Harry W. Davis.

Chicago, Ill.; Home Manufacturing Company; $25,000; to deal in all kinds of motors, engines and searchlights; B. F. Bartel, L. D. Jacobs, W. F. Heineman.

Chicago, Ill.; Lakeside Motor Truck Attachment Company; $30,000.

Chicago, Ill.; Make-A-Motor Truck Company; $200,000; to manufacture tools, trucks and supplies of all kinds. L. B. Garrison, W. B. Ingwerson, D. D. Seem.

Louisville, Ky.; Winklemann-Schade Motors Company; $20,000; W. F. Winklemann, Walter Schade, Bessie Schade.

Buffalo, N. Y.; Safety First Auto Parts Company; $25,000; P. U. Daniel, G. H. Hutchings, Fred S. Jackson.

New York, N. Y.; Arion Automobile Company; $2,000,000; to manufacture and sell all kinds of motors, engines, machinery and supplies.

New York, N. Y.; Buffalo Metal Products Manufacturing Company, Inc.; $50,000; to deal in auto specialties, hardware and pressed steel devices; W. S. Kelley, J. W. Ellis, D. Reid.

New York, N. Y.; Covert Gear Company; $1,000,000; to manufacture transmissions for autos; Byron V. Covert, William Armstrong.

Rome, N. Y.; Maxwell Foundry Company, Inc.; $25,000; to manufacture bronze, iron and steel castings of all kinds; H. B. Maxwell, M. H. Maxwell, T. H. Hughes.

Bryan, O.; Bryan Motor Service Company; $70,000.

Columbus, O.; Phelps Manufacturing Company; $100,000; to manufacture wire wheels; H. C. Phelps, G. R. Hedges, Hugh Huntington, H. R. Tingley, S. A. Hoover.

Dayton, O.; Dayton Body Company; $100,000; to manufacture motor car bodies; John Dudley Artz, Charles M. Feldman, William G. Melle, Lula M. Sammons, W. M. Osterday.

Dayton, O; Inter-State Motor Sales Company; $10,000; W. C. Littleton, O. B. Lehman, H. N. Filbert, H. H. Kellenberger, H. F. Nolan.

Edgwood, O.; The Ohio Valley Motor Company; $10,000; W. C. Knoblaugh, A. A. Terrill, Charles L. Herb, Walter G. Knoblaugh, Jr., J. L. Robinson.

Philadelphia, Penn.; Stortz Gear Shift Company; $50,000; to deal in automobile parts.

Knoxville, Tenn.; Kuhlman Motor Sales Company; $2000; W. D. Kuhlman. J. B. Caldwell, J. W. Low, D. M. Chambliss, E. W. Kuhlman.

El Paso, Tex.; Cactus Motor Company; $15,000; E. E. Wiseman, Charles Thomas, R. L. Nichols.

Fort Worth, Tex.; Automatic Carburetor Sales Company; $2000; W. C. Forbes, Marcus Bright, Henry Youngblood.

Racine, Wis.; Standard Gas Saver Company; to manufacture economizing devices and appliances for motor cars and trucks; M. E. Walker, C. V. McAvoy, H. R. Simmons.

Dealers In Automobiles and Motor Trucks.

Mobile, Ala.; The Postoffice Auto Company; $6000; to engage in general auto business; J. O. Bennett.

Stamford, Conn.; Philben Auto Supply Company; $5000; to deal in automobiles; Philip R. Straus, Thomas A. Kilfoil, Charles F. Maguire.

Jacksonville, Fla.; Florida National Motor Sales Company; $5000; to deal in motor vehicles and to conduct a garage; C. E. Garner, president; Clifford A. Payne, vice president; M. Schwarts, secretary and treasurer.

Jacksonville, Fla.; Quincy Automobile Company; $5000; to deal in automobiles, repair and to sell; R. I. Stephens, president; Robert M. D. Sylvester, vice president; J. A. Edwards, secretary and treasurer.

Chicago, Ill.; Arrow Automobile Company; $2,000,000.

Indianapolis, Ind.; Hill-Sawin Company; $10,000; to deal in automobiles; Ira L. Sawin, David B. Hill, Daniel F. Snepp.

Indianapolis, Ind.; The Partlow-Jenkins Motor Car Company; $20,000; to deal in automobiles; L. J. Partlow, J. H. Jenkins, Daisy Partlow.

Richmond, Ind.; Laurel Motor Car Company; $5000; Charles E. Hays, Harry Gates, H. J. Gates.

Jefferson, Ia.; Hutchinson Automobile Company; $40,000; E. B. Cutler.

East Milton, Mass.; The Projects Company; $50,000; to deal in automobiles; Ralph R. Bradley, Percival W. White, Benjamin W. Fuller, Arthur C. Everett.

New Bedford, Mass.; Giles-Tobey Company; $10,000; to deal in automobiles; William R. West, John T. Bullard, John M. Bullard.

Worcester, Mass.; Hi-Lo Jack Company; $150,000; to deal in automobiles and supplies; president, J. Howard Joynes; vice president, Amos F. Lanier; George F. Hurlburt.

Minneapolis, Minn.; E. R. Boutell, Inc.; $50,000; E. R. Boutell, J. M. Boutell, M. B. Mitchell.

St. Louis, Mo.; The M. & N. Automobile Equipment Company; $5000; to deal in automobiles and accessories of all kinds for motor vehicles; E. L. and George D. Noonan.

Camden, N. J.; Keystone Wagon Company; $50,000; to deal in automobiles and machinery; Theodore W. Messick, Philop Catturo, Carlo Grillo.

Elizabeth, N. J; Elizabeth Auto Sales Agency; $50,000; to deal in autos; Christian C. Schwartz, A. Barnett, Abe J. David.

Princeton, N. J.; Kurkjian's Garage, Inc.; $40,000; to deal in automobiles; Kirkor Kurkjian, Lena Kurkjian, Henry Brehmeyer.

Brooklyn, N. Y.; Crocker Private Owner's Garage Company; $20,000; to deal in carriages, hacks and autos; H. L. Decastille, H. A. and J. C. Crocker.

Brooklyn, N. Y.; The Midwood Auto Service, Inc.; $10,000; Max Sheinart, Clarence M. Glueck, Frieda V. Gold.

Buffalo, N. Y.; Buffalo Automobile Service Association, Inc.; $1000; James G. Barclay, Estelle L. Barclay, John G. W. Knoll.

Elmira, N. Y.; Frisbie Motor Sales Company, Inc.; $10,000; to deal in autos and to conduct a garage; F. N. Edie, O. N. Roe, R. W. Hinton.

New York, N. Y.; Colonial Motors, Inc.; $61,000; to deal in auto trucks and vehicles; J. O. Low, C. N. Guater, J. F. Plummer.

New York, N. Y.; Lincoln Motor Company, Inc.; $25,000; to deal in motors, engines and autos. Will also conduct a garage; G. M. and J. P. Shafer, H. R. Fletcher.

New York, N. Y.; Stortz Gear Shift Company; $50,000; to buy, sell and deal in automobiles and automobile parts.

New York, N. Y.; 149th Street Garage; $10,000; to deal in autos; J. Barry, P. Feiner, E. A. Brown.

Rochester, N. Y.; E. J. Ellis & Co., Inc.; $30,000; to deal in motor vehicles, parts and accessories; E. J. Ellis, R. Huff, C. E. Campbell.

Rochester, N. Y.; The A. H. Gabel Company; $20,000; to deal in autos, carriages, boats and electrical appliances; R. C. and A. H. Gabel, C. H. Crouch.

Cincinnati, O.; The Times Square Automobile Company; $2000; J. D. Ellis, L. Kramer, Clara Callahan, A. C. Reisenberg, G. Bettman.

Cleveland, O.; Cleveland Glide Motor Car Company; $10,000; to deal in motor cars and supplies; K. Reymer, Ida B. Emerich, H. E. Emerich, A. W. Emerich.

Cleveland, O.; Ohio Auto Sales Company; $10,000; to deal in motor cars and supplies; H. L. Laurence, W. C. Criswell, F. W. Lance, Nettie Koh.

Kamma, O.; The West Park Auto Company; $5000; E. E. Parsons, W. M. Fisher, A. E. West, G. B. West, A. R. Parsons.

Toledo, O.; State Motor Sales Company; $60,000; to deal in motor cars; Elon Gauntlett, T. E. Wyatt, H. W. Nauts, H. M. Eager, U. G. Denman.

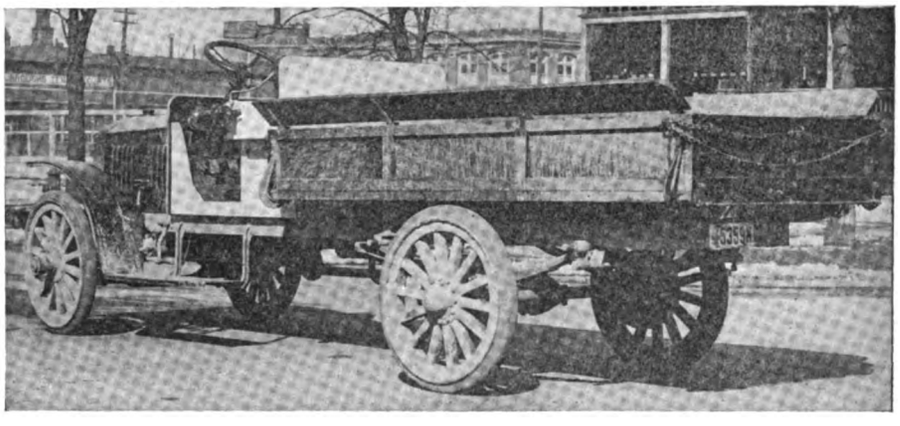
Ardmore, Okla.; Ardmore Auto Company; $10,000; C. E. Syles, D. C. Fitzgerald, C. F. Adams.

Muskogee, Okla.; Hendrix Motor Car Company; $2500; G. G. Hendrix, Mary E. Hendrix, Irene Hendrix.

Oklahoma, Okla.; Motor Sales Corporation of Oklahoma City; $5000; Edwin C. Ruff, W. E. Berry, Clarence Ullery.

Philadelphia, Penn.; K. and K. Motor Car Company; $5000; William B. Fort, George H. Knapp, Albert Hughes.

Norfolk, Va.; Bell Motor Company, Inc.;



The Globe Six-Cylinder 1500-Pound Truck Chassis with Standard Express Flareboard Type Body, Manufactured by the Globe Motor Truck Company, Northfield, Mich., and Priced at $995 for Chassis—Complete Description in the Motor Truck, April, 1916.

Capacity in Pounds, 1500.
Wheelbase, 126 Inches.
Horsepower (S. A. E.), 25.
Bore and Stroke, 3¼ by 4½.
Number of Cylinders, Six Block.
Carburetor, Master.
Ignition, Dixie.
Lubrication, Splash Pressure.
Governor, Shaft.
Final Drive, Internal Gear.
Rear Springs, Semi-Elliptic.
Tires, Solid, 34 by 3½ Rear.

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$25,000; S. Grove, president; B. M. Bell, secretary.

Norfolk, Va.; Monticello Auto Service; $25,000; W. T. Butler, president; C. R. Davies, secretary.

Oshkosh, Wis.; Thorn Automobile Company; $25,000; A. H. Thorn, R. W. Thorn, K. L. Thorn.

Unclassified Incorporations Recently Made.

Corbin, Ky.; Corbin Auto and Delivery Company; $1000; W. H. Chandler, Q. A. Miles, R. O. Williams.

Indianapolis, Ind.; Motor Car Protection Company; to apprehend thieves; George Lemaux, Fred L. Willis, Virgil H. Lockwood.

Davenport, Ia.; Keeler Taxicab Company; $25,000.

Davenport, Ia.; Motor Express Company; $10,000; S. M. Gustine, C. S. Blanchard, F. R. Blanchard.

Watertown, Mass.; Interboro Transportation Company; $25,000; to deal in automobiles; Marshall B. Hall, George H. Timson, Joseph McNally.

Detroit, Mich.; Steel Treating Equipment Company; $10,000; G. C. Nixon, Ida C. Nixon, William Heer, Jr.

Bronx, N. Y.; New York Aero Construction Company; $50,000; to manufacture aeroplanes; William R. Phillips, Cecil H. Upper, Warren S. Eaton.

Brooklyn, N. Y.; Export Automobile Case Company; $25,000; to manufacture boxes and cases for autos and motors; W. J. Daly, O. Venino.

New York, N. Y.; Interborough Sight Seeing Company; $10,000; will operate sight seeing autos and 'buses.

New York, N. Y.; Marko Storage Battery Depot of New York, Inc.; $5000; Paul M. Marko, M. H. Tuttle, Joseph Kresse.

New York, N. Y.; The Old Lenox Taxi Service, Inc.; $5000; Gus Lebost, Julius Lebost, Joseph Lebost.

New York, N. Y.; Smith-Eldridge Company; $25,000; livery, cab, auto taxicabs; H. S. Godsoe, W. E. Eldridge, C. L. Smith.

Cleveland, O.; The Von Alt-Callins Company; $20,000; C. H. Callings and others.

Columbus, O.; Middle West Refining Company; $50,000; R. E. Westfall, Smith W. Bennett, James Judge, N. Bales, H. Shelter.

Zanesville, O; The Muskingum Motor Club Company; $10,000; C. T. Marshall, C. U. Hanna, O. W. Wendell, Edward N. Roemer, Harry C. Smith.

Garages and Repair Shops Newly Chartered.

Danbury, Conn.; The Pyramid Garage; $5000; Maude L. Parmelee, J. Moss Ives, Thomas A. Keating.

Chicago, Ill.; City Auto Parking Company; $35,000; to conduct an automobile garage.

New York, N. Y.; Barrow Street Commercial Garage, Inc.; $5000; to deal in autos, motor trucks and to conduct a garage; L. Rosenstraus, S. Hellinger, S. Bermain.

Saratoga Springs, N. Y; Saratoga Springs Garage Company, Inc.; $10,000; to conduct a garage and to deal in autos; W. C. Compton, C. H. Knapp, Ranulf Compton.

Rochester, N. Y.; The City Hall Garage and Storage Company; $1500; William H. Doolin, Nellie C. Doolin, William J. Doolin.

Cleveland, O.; Electric Welding Company; $10,000; to do all kinds of welding and motor car repair work; K. German, James H. Palmer, S. Chester Crobaugh, A. R. Corlett, M. Y. Yost.

Kansas, O.; Inter-City Garage and Supply Company; $10,000; to operate a garage and deal in accessories; L. Jones, C. W. Sprout, Amelia Jones, E. A. Shuman, Charles Schuster.

Seattle, Wash.; Clark Garage and Repair Shop; $4000; J. H. Clark, Hans Hanson, J. H. Gordon.

NEW CONCERNS AND CHANGES.

General News Regarding Transfer of Ownership and Opening of Garages and Agencies and Changes of Names.

The following data relate to the establishment of new concerns, including agencies, garages, branches, service stations, repair shops, etc., and form valuable information. Herewith is also recorded the recent changes of names of business concerns in the industry and allied lines, and the transfers of ownerships of businesses. The record includes all the states and is classified for convenience.

Reorganizations and Changes of Names.

Madera, Cal.; Alvin Kast has opened a motorcycle store under the name of the Kast Cyclery.

Jersey City, N. J.; The Hartford Suspension Company will change its name to the Hartford Shock Absorber Company.

Fergus Falls, Minn.; C. A. Anderson and Fritz Schumann are now located at 112 Bismarck avenue, East. The firm name is Quick Service Auto Company.

St. Louis, Mo.; The Stevens-Waverly Auto Company has changed its name to the Stevens Motor Car Company. The firm is the local distributor for Lexington and Milburn Light Electric cars.

Cleveland, O.; The name of the Singleton-Hunting Company, general advertising agents, has been changed from the Singleton-Tripp Company to the above.

Knoxville, Penn.; The Service Vulcanizing Company, composed of George F. and C. A. Englehart, has had its name changed to Englert & Englert.

Recent Transfers of Business Ownerships.

Indianapolis, Ind.; The Hoosier Truck Company has been organized and has taken over the interests of the Props-Dunn Truck Company and will continue in business at the same location at 1336 East Washington street.

Davenport, Ia.; Joseph A. Eisele has bought the Union Motor Company and has secured the Chevrolet agency.

Exira, Ia.; Tobian Forrester has purchased an interest in the Donaldson Garage.

Greenfield, Ia.; Fred Russell has bought the interest of his partner in their repair business.

Missouri Valley, Ia.; Fred Brown has bought the Foote & Sahn Garage.

Moville, Ia.; R. L. Smith has bought the business of the Motor Service Company from R. M. McCarter & Son.

Shenandoah, Ia.; Hart Bowman has sold his interest in the Piper Garage to Joseph Piper and will move to Lincoln, Neb., where he will open a motorcycle and bicycle shop.

Augusta, Me.; The City Hall Garage, owned by Charles O. Tibbetts, has been sold to James W. Harbey and Edgar Marden.

Baltimore, Md.; The Mohawk Tire Sales Company has taken over the business of the Motor Car Accessory Company at 1201 North Charles street, and will have the agency for Mohawk tires in Maryland, Delaware and Virginia.

Springfield, Mass.; The Tomlinson Motors Company, 158 Chestnut street, have acquired the interests of the Tomlinson Downs Motors Company and have taken the agency of the Marmon and Chandler cars.

Ashley, Mich.; L. K. Kirby has taken over the Mack Garage. He has the agency for the Overland and Ford. It is now called the Ford Garage.

Hildreth, Neb.; Jonas Volz is now the sole owner of the Hildreth Auto Company's Garage, having purchased the interest of his partner.

Neligh, Neb.; A. G. Howell has bought the garage of H. C. McNare.

Plattsmouth, Neb.; David Amick has purchased the garage of Samuel G. Smith.

Royal, Neb.; M. E. Travenner has bought the Royal Garage.

Manchester, N. H.; James Reid, 431 Granite street, has disposed of his trucking business and will engage in the garage business. He has purchased property on Mertick street, East Manchester, and will erect a modern garage building at a cost of $35,000.

Buffalo, N. Y.; The Derrick Motor Sales Company has taken a lease for a long term of years at 1241 Main street.

New York, N. Y.; The Mason Motor Car Company has taken the entire building at 1946 Broadway.

New York, N. Y.; Rose Weber has bought the two-story garage at 220 W. 65th street.

Fargo, N. D.; C. E. Davidson & Olsen has taken the interests of the Davidson & Olsen Implement and Garage business and the new firm will be known as the C. E. Davidson Implement Company.

Marmarth, N. D.; T. O. Devasher, Frank Gore and Frank Nauman have purchased the Empire Garage of F. A. Powley and will now be known as the Marmarth Garage.

Clyde, O.; The Elmore Automobile Company's plant has been purchased by the Universal Paper Products Company of Chicago.

Chester, Vt.; Charles F. Henry has bought the garage business of Ira Holden.

Woodstock, Vt.; The Commercial Livery and Garage has bought the garage business of F. A. Richmond.

Cedarburg, Wis.; The Roebken Garage has been purchased by the newly organized Boerner Automobile Company.

La Crosse, Wis.; J. Hafner has purchased an interest in the automobile firm which will be known as Wermeskirchen, Hafner & Co.

Racine, Wis.; C. A. Fathers has purchased a half interest from A. L. Lawrence in the Avenue Garage, 915 Washington avenue.

Garages and Repair Shops Opened Recently.

Birmingham, Ala.; The Alabama Auto Repair Shop is now open for business at 1903 10th avenue south.

Pomona, Cal.; Frank Becker and Robert Ray have opened a repair shop and accessory store in a building on North Carey avenue, formerly leased by the Studebaker agency.

Indianapolis, Ind.; The Auto Accessories and Supply Shop, 102 West North street, is now open for business.

Anamosa, Ia.; Kim McDaniel has opened a new garage.

Glenwood, Ia.; H. A. Galliher has opened a garage in Malvern, Ia.

Shenandoah, Ia.; B. N. Alexander has opened a new Ford garage and service station.

Boston, Mass.; The Terminal Garage has been opened for business by Frank Ferdinand, Victor A. Heath and J. A. Granstrom, members of the firm of Ferdinand's Furniture Company.

South Acton, Mass.; Charles Ford and Phillip Hocquard have opened a garage on Maynard street.

Ann Arbor, Mich.; The Michigan Tire and Rubber Company has opened a garage to handle accessories and to do tire repairing.

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Hanover, Mich.; Rae Leggett has opened a garage.

Muskegon, Mich.; Helman & Latsch, Maxwell distributor, has opened a new garage at Pine and Israella streets.

Saline, Mich.; The Square Deal Garage has been opened for business by George E. Gaylord.

Fairbury, Neb.; Dudley Leeper has opened a garage in Auburn, Neb.

Omaha, Neb.; Zwiebel Brothers is a new firm in the wholesale and retail tire selling and repairing line. The company is located at 2518 Farnam street.

Binghamton, N. Y.; George W. Decker has opened a repair shop on Ferry street.

New York City, N. Y.; Louis Jandorf has opened a fine new tire and accessory store at 1759 Broadway.

Humboldt, S. D.; Ernest Iwerks has opened a garage.

Wheeler, S. D.; Carl Hammer and Andrew Johnson have opened a new garage.

Agencies, Dealers and Service Stations.

Birmingham, Ala.; The Firestone Tire and Rubber Company has opened a store at 300 20th street.

Meriden, Conn.; Frank H. Ives, local agent for the Overland, has taken the agency for the Hart-Bell carbon remover.

Washington, D. C.; The American Tire Sales Company is a new automobile tire concern located at 1623 14th street, northwest, with the Federal Auto Supply Company, 476 Pennsylvania avenue, northwest, as a branch.

Jacksonville, Fla.; The Atkinson Tire and Supply Company is now distributor for the Republic Staggard tread tire and Black Line inner tubes, in addition to Kelly Springfield cars.

Atlanta, Ga.; Carl W. Fort has taken the agency for Vacuum cup tires.

Atlanta, Ga.; The Ozburn Automobile Supply Company has been appointed distributor for Alabama, Georgia and southern South Carolina for White Star lubricating oil.

Chicago, Ill.; The Hudford Company has opened a branch for Hudford parts at 1718 Indiana avenue, with H. R. Brush as manager.

Peru, Ill.; Matt Kanuf has leased the show rooms of the new Peru Auto Service Company, at Fifth and Peoria streets. He has the agencies for Chalmers, Studebaker, Saxon and Elgin cars and Federal trucks.

Rockford, Ill.; The Williamson Motor Company has taken the agency for Ford cars.

Topeka, Kan.; The Capital Auto and Supply Company has taken the agency for Mitchell cars.

Baltimore, Md.; The Elite Garage, McElderry street, east of Paterson Park avenue, has taken the agency for Pathfinder cars.

Baltimore, Md.; The Tire Mart, 1419 North Charles street, has been appointed distributor for Osgood Lens and Globe tires.

Cumberland, Md.; The Auto Repair Company, Inc., has opened a service station for Willard storage batteries, on Front and Frederick streets.

Boston, Mass.; Charles A. Potter has opened an accessory store at 83 Church street.

McIntosh, Minn.; Kegel Brothers have opened for business in the Studebaker Garage. They are the agents for the Studebaker car.

Park Rapids, Minn; The Auto Tire Vulcanizing Company, Houghton & Smith, have opened an office. The company will handle the U. S. make of tires and also oils and gas.

St. Paul, Minn.; A. Barth, 537 Rice street, has opened an automobile top and trimming shop, known as the St. Paul Auto Top Works.

Woodlake, Minn; A. H. Hall and W. P. Gatchell have opened a Ford station in the building formerly occupied by the Bee Hive.

St. Louis, Mo.; The Phoenix Auto Supply Company has been appointed distributor for Westinghouse electric equipment for Ford cars, Stewart carburetors and the Deflex adjustable headlight deflector.

Far Rockaway, N. Y.; George W. Mount has opened a store near Central street. He will carry Sterling cars and Swinehart tires.

Johnstown, N. Y.; Vedder Brothers have established a service station for the Detroit Battery Company.

New York, N. Y.; Hurlburt Motor Company, Third avenue and Harlem river, has increased its capital stock from $300,000 to $450,000.

New York, N. Y.; James C. Nichols, 1673 Broadway, has undertaken a service station for the Detroit Battery Company.

Fargo, N. D.; J. W. Nisson and Linas Peterson will conduct an automobile business on quite an extensive scale. The new firm will be known as Nisson & Peterson and will have an up-to-date garage in the rear of the postoffice.

Cincinnati, O.; The Queen City Motor Delivery Company has increased its capital stock from $5000 to $100,000.

Allentown, Penn.; The Altoona Storage Battery Service Station, 200-202 Chestnut avenue, has established a service station for Willard storage batteries.

Sharon, Penn.; W. J. Vath, 28 North Water street, has opened a service station for Willard storage batteries.

Burlington, Vt.; H. R. Watkins will handle Westcott cars in 10 counties about Burlington.

Tacoma, Wash.; W. H. Ingle of the Standard Auto Works, 1014 Puyallup avenue has taken the agency for Simplex Auto trailers.

Elkins, W. Va.; Elkins Power Company, 220 Davis avenue, has undertaken a service station for Willard storage batteries.

Milwaukee, Wis.; The J. J. Dougherty Company, Inc., 803 Grand avenue, has opened a branch store at 398 Kenilworth place.

AGENCIES RECENTLY APPOINTED.

Add to and Correct Your Mailing List—Symbol * Indicates Commercial Vehicle, † Electric and ‡ Light Car.

ALABAMA.

Alliceville—Chevrolet, Sanders-Shirley Motor Co.
Birmingham—Monroe, The Flint Motor Co.
‡Fostoria, Charles Dengre.
Montgomery—Studebaker, The Doster Motor Car Co.

CALIFORNIA.

Bishop—Oldsmobile, Foorman Brothers.
San Diego—Stutz, Southwestern Motor Car Co., Eighth and B streets.
Sacramento—Oldsmobile, Charles B. Bagswills, Riviera avenue.
Case, Price Motor Car Co.
San Francisco—Westcott, W. H. Thorne.

COLORADO.

Bennett—Chevrolet, Charles Hess.
Craig—Chevrolet, Will H. Owen.
Denver—Dort, The Hupp Motor Sales Co.
Patterson, The L. E. Ketton Motor Car Co., 1616 Broadway.
*Little Giant, Mulnix & Rarie, 35 Colfax avenue.
Greeley—Chevrolet, H. S. Crouse.
Rockey Ford—King, Valley Mercantile Sales Co.

CONNECTICUT.

Hartford—Monroe, George D. Knox.
Meriden—Cadillac, A. D. Meeks.
Chalmers, The Meriden Auto Co.
Lexington, J. R. Hull.
Westcott, The Cuno Engineering Co.

FLORIDA.

Jacksonville—Abbott-Detroit, The Auto Sales Co.
Pensacola—Oldsmobile, G. H. Hays.
Tampa—Chevrolet, The West Coast Auto Co.

GEORGIA.

Cuthbert—Chevrolet, J. S. Zuber.
Greensboro—Hupmobile, The Charlotte Motor Car Co.

IDAHO.

Burley—Oldsmobile, Minnicassis Auto Co.
Star—King, C. A. Johnson.
Twin Falls—Oldsmobile, Seal Auto Co.

ILLINOIS.

Argenta—King, M. L. Coffman.
Chicago—Detroiter, The McCarty Auto Company.
Dodge, Lawrence & Armigo, 1120 East 62nd street.
Elcar, B. C. Hamilton, 1233 Michigan avenue.
Oakland, The Tennant-Oakland Co.
East St. Louis—Herff-Brooks, The East Side Overland Automobile Co.
Eldena—Chevrolet, Clessner Brothers.
Havana—King, Grant M. Sloan.
Joliet—Oldsmobile, Joliet Motor Car, 504 Clinton street.
La Salle—Oldsmobile, L. J. Travis.
Lincoln—*Koehler, Cadillac Sales Co.
Mason City—King, W. C. McDowell.
Odin—King, Sloan & Krodell.
Olney—King, Hill-Hudson Co.
Pana—*Koehler, F. P. Renz.
Paxton—King, Rodeen Brothers.
Peoria—King, J. F. King, Jr.
*Chase, Isch Brothers & Hacksaw.
Rock Falls—Westcott, The Eureka Co.
Rockford—Oldsmobile, Keyt-Erb Auto Co., 429 S. Main street.
Shelbyville—King, The Tallman-Been Hay Press Co.
Wilmington—Oldsmobile, H. L. Gurney.

INDIANA.

Camden—King, John W. Shanks.
Dana—King, J. C. Hardy & Co.
Hammond—Oldsmobile, Brunnell's Auto Sales Agency, 504 Hohman street.
Lafayette—King, W. P. Clark.

IOWA.

Buckeye—Chevrolet, The Hanson-Tyler Co.
Buckgrove—King, B. Quathamer.
Cedar Falls—Chevrolet, Larsen Motor Co.
Coin—King, C. G. Davison.
Dakota City—Chevrolet, Lenne Electric Garage Co.
Davenport—Moon, The Louis Otto Automobile Co.
‡Fostoria, The Central Auto and Tire Co., Inc.
Ft. Dodge—Chevrolet, The Hanson-Tyler Auto Co.
Iowa City—King, Western Auto Specialty Co.
Luverne—Chevrolet, Notestine Auto Co.
Madison—Oakland, J. F. Ochsner.
Manchester—Oldsmobile, Strickland & Strickland.
Newton—Chevrolet, The Newton Auto Co.
Storm Lake—*Koehler, Cleveland & Rosenbrook.
Waterloo—Dodge Brothers, The Altmeyer Motor Co.

KANSAS.

Hutchinson—Dodge Brothers, The Arnold Auto Co.
Kingman—Chevrolet, Grant Sales Co.
Wichita—Oakland, Evans & Reser.

KENTUCKY.

Bowling Green—Oldsmobile, Roy Hagen.
Cynthianna—Chevrolet, Embry & Harney.

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Louisville—Case, K. S. Stiles.
Haynes, The Paige Motor Sales Co.
Mount Vernon—Chevrolet, J. J. Berthwern.

LOUISIANA.

McNary—Ford, C. A. Carruth.
Shreveport—Chevrolet, D. E. Shaw and H. F. Adams.

MAINE.

Augusta—Westcott, J. W. Harvey.
Bangor—Chandler, C. H. Abbott.
Carson—King, Mack Bouchard.

MARYLAND.

Thurmont—*Koehler, Thurmont Garage.

MASSACHUSETTS.

Brockton—Westcott, The Morrow Auto Co., 155 Main street.
Brookline—Overland, L. A. Vachon.
Canton—Chevrolet, John Kelly.
Easthampton—Chevrolet, Linwood Rust.
Holyoke—Stearns-Knight, H. H. Hevey, 154 Elm street.
New Bedford—Saxon, Edward C. Earley.
Northampton—Hudson, H. N. Griffiths.
Springfield—†Detroit, The Magin Automomobile Co., 2 Division street.
Westfield—Maxwell, Charles S. Sherman.
Williamsett—Saxon, Frank Fuhrman, 19 Whitman street.

MICHIGAN.

Alpena—Chevrolet, W. H. Schoon and George F. McRae.
Detroit—*Republic, The Towar-Ayers Co., 472-480 Lafayette Boulevard West.
Fairgrove—Chevrolet, W. J. McCluney.
Flint—Oldsmobile, Patterson Auto Sales Co., 119 E. Third street.
Ithaca—Dodge Brothers, Reynolds & Bulyard.
Hudson, Reynolds & Bulyard.
Holly—Dodge Brothers, J. R. Ins-Keep.
Kalamazoo—Elco, H. E. Hill.
Elgin-Six, Adams & Brinkham.
Kenton—Chevrolet, The H. Kaiser Buggy Co.
Lansing—Argo, James Morgan.
Briscoe, James Morgan.
Mecosta—Chevrolet, W. E. Roberts.
Saginaw—Studebaker, The Andrews Motor Sales Co.
Ypsilanti—Jackson, Charles T. Newton.

MINNESOTA.

Comfrey — Studebaker, Windschitl Brothers.
Dawson—Oldsmobile, Ell Sear.
Eveleth—KisselKar, Slater Bargh.
Mankato—Chandler, Chris Danielson.
Maxwell, Chris Danielson.
Saxon, Chris Danielson.
Marshall—Buick, T. Thomas.
Haynes, T. Thomas.
Minneapolis—Abbott-Detroit, The A. M. Choate Auto Co.

MISSISSIPPI.

Natchez—King, F. C. Sanford.

MISSOURI.

Kansas City—Case, Case-Dennis Motor Car Co.
Simplex, Jackals & Campbell.
*Simplex, Jackals & Campbell.
*Simplex tractor trailers, Jackals & Campbell.
Louisiana—King, Pribe & Sons.
St. Louis—Lexington, The Stevens-Wayerly Co.
National, The Trenton Motor Car Co.

NEBRASKA.

Harrington—Oldsmobile, F. J. Hirschman.
Omaha—Chandler, The Card-Adams Co.
Detroit Six, The C. W. Framis Auto Co., 2216-18 Farnham street.
King, Noyes Killy Motor Co., 2206 Farnham street.

NEW JERSEY.

Morristown—*Koehler, McElwell & Marshall.

NEW MEXICO.

Tucumcari—Oldsmobile, Charles T. Adair.

NEW YORK.

Auburn—Chevrolet, The Stansfield-McGriss Co.
Brooklyn—Abbott-Detroit, Kesler & Tag.
Buffalo—Empire, The Brunns Carriage Co.
Grant Six, The Derrick Motor Sales Co.
Pullman, Schoepfin-Baxter Co., 80 West Mohawk street.
Coxsackie—*Koehler, P. V. Washburn.
Middletown—*Koehler, Charles A. Randall.
New York City—*Koehler, Max Berczi.

NORTH CAROLINA.

Louisburg—Oldsmobile, Weldon G. Egerton.

NORTH DAKOTA.

Leeds—King, Olaf Morstad.
Milton—New Era, J. W. Pratton, Allen McDonald.
Perth—Dodge Brothers, C. J. Berg.

OHIO.

Barnesville—Oldsmobile, Thomas McNiece, East Church street.
Cleveland—Abbott-Detroit, The Louis Disbrow Motor Car Sales Co., 1905 East Third street.
Elcar, Ohio Metz-Elcar Co.
Metz, Ohio Metz-Elcar Co.
Roamer, The Ohio Halladay Co., 1844 Euclid avenue.
Doylestown—*Koehler, N. R. Zimmerman.
Eaton—King, Brown's Auto Co.
Edgerton—Chevrolet, E. R. Myers.
Leipsic—Oldsmobile, Townsend Motor Sale Co.
Piqua—Oldsmobile, Central Auto Co. (E. W. Sarver.)
Portland—Mercer, The H. L. Mann Motor Co.
St. Clairsville—Chevrolet, T. J. McNamee.
Youngstown—Westcott, Ensign Yager, 815 Ford avenue.

OKLAHOMA.

Oklahoma—Velie, C. B. Haycox.
Wapanucka—Chevrolet, The Smith Reeves Co.

OREGON.

White Salmon—Chevrolet, Dorser & Sorter.

PENNSYLVANIA.

Allentown—Westcott, Keystone Motor Car Co.
Conemaugh—King, S. S. Mack.
New Philadelphia—*Koehler, The Central Garage.
Philadelphia—Lexington, The Rogers Sargent Motor Car Co.
Saxon, Orin S. Wilson.
Pittsburg—Pilot, The Harter Motor Sales Co.
*Rush, Harter Motor Sales Co., 6225 Marchard street.
Topton—Oldsmobile, Topton Motor Car Co.
Wapwallopen—*Koehler, Heller Sales Co.
Warren—King, Russell Brothers.

SOUTH DAKOTA.

Groton—Oldsmobile, H. W. Cassles & Co.
Huron—Ford, Thomas Peake.
Oakland, Thomas Peake.
Reo, Clayton Campbell.

TENNESSEE.

Abilene—King, Dial Jones Auto Co.
Cleburne—Chevrolet, J. R. Barnhill.
Jasper—Paige, J. C. Kelly.

TEXAS.

Bay City—Chevrolet, S. O. Eidman.
Gilmer—Chevrolet, Marshall & Chandler.
Houston—Chandler, The Taylor Motor Co.
Scripps-Booth, The Taylor Motor Co.

UTAH.

Oregon—King, Oregon King Eight Auto Co., 605 Eccels building.

VERMONT.

Burlington—Westcott, H. R. Watkins.

WASHINGTON.

Seattle—Chalmers, Carner Motor Car Co.
Spokane—Lexington, The Nelson Motor Co.
Sunnyside—King, Sunnyside Garage.

WEST VIRGINIA.

Charleston—Oldsmobile, O. O. Older.
Clarksburg—Chevrolet, The Ransome Motor Car Co.
Fayetteville—Oldsmobile, J. C. Hamilton.
Grafton—Oldsmobile, Grafton Motor Co.
Huntington—King, Paul Bennett.
Landsgraff—King, Thomas E. Stofflet.
Martinsburg—Oldsmobile, National Garage.
Oxford—King, Page J. Knight.
Wheeling—Hudson, Krim Bros.
Pullman, The Standard Motor Car Co.
Studebaker, Blazer & Blazer.

WISCONSIN.

Blanchardville—Oldsmobile, Kelly & Alfred.
Chaseburg—King, Arthur Kritchman.
Cuba City—Chevrolet, Edwin Helm.
Darlington—Chevrolet, W. T. Woodward.
Eau Claire—Chevrolet, J. A. McDonald.
Highland—Chevrolet, P. W. Hennessey.
Hurley—*Koehler, Cattoi Brothers.
Lancaster—Chandler, W. J. Bailie.
Madison—Oldsmobile, Capitol Garage and Repair Co.
*Federal, E. A. Fuller Sales Co.
Manitowoc—Ross Eight, The Olson-Pauly Automobile Co.
Milwaukee—Champion, The Hilgendorf Hardware Co., 303 Third street.
Marmon, The Motor Car Sales Co., 136 Mason street.
Stutz, The Stutz Motor Co., 430 Jefferson street.
Stevens Point—King Eight, M. J. Moller.
Superior—Hupmobile, Twohy-Elmon Mercantile Co.
Pullman, Ray Baxtrum, 2017 Maryland avenue.
Waupaca—Allen, William Koening.

WYOMING.

Dixon—King, E. W. Reader.

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Tells How to Select An Engine.

Engine Builder Declares There Are 10 or 12 Points by Which It Can Be Judged.

There are 10 or 12 points by which a new engine can be judged, declares the engineer of the Sharples Separator Company. The first of these points concerns the ignition system. Select an engine which is equipped with a magneto, because that type does not become exhausted like a battery and the connections and wiring are more simple.

If possible, it is a good plan to purchase an engine having both battery and magneto ignition, that is, two complete sparking sets. The advantage of double ignition is that should one system fail the other can be used. The two systems practically never fail at the same time.

Engines having this type of ignition place the magneto on one side of the cylinder, and entirely separated from this and on the other side of the cylinder is the spark plug with wire leading to the battery. In cold weather starting may be facilitated by switching on both sparks simultaneously. For ordinary operation the magneto spark can be used entirely, thus greatly lengthening the life of the battery.

Another point of importance to consider is the cooling system. Hopper cooled is generally considered to be the best, being the simplest and the most positive. Air cooled engines often afford satisfaction, but in general water cooled is more efficient and safer, especially in warm weather. Pump circulation systems require pipes, tanks, screens, pumps, etc., these being eliminated in the hopper cooled engine.

Ascertain that the flywheels run true; this is an indication of first class workmanship. They should be heavy and the engine operate with but little shaking and vibration, showing that it is properly balanced.

Don't buy an engine which is cheap in price or one of an unknown make. It is simple enough to build an engine cheaply from cheap materials and then sell it at a low price, but this type of engine in the majority of cases will not stand up and will cause delays and wear out quickly. It is by far the better plan to purchase from a firm with established reputation because such a concern cannot afford to sell an unsatisfactory product. Do not place the order with an unknown party, regardless of the strength of their selling arguments.

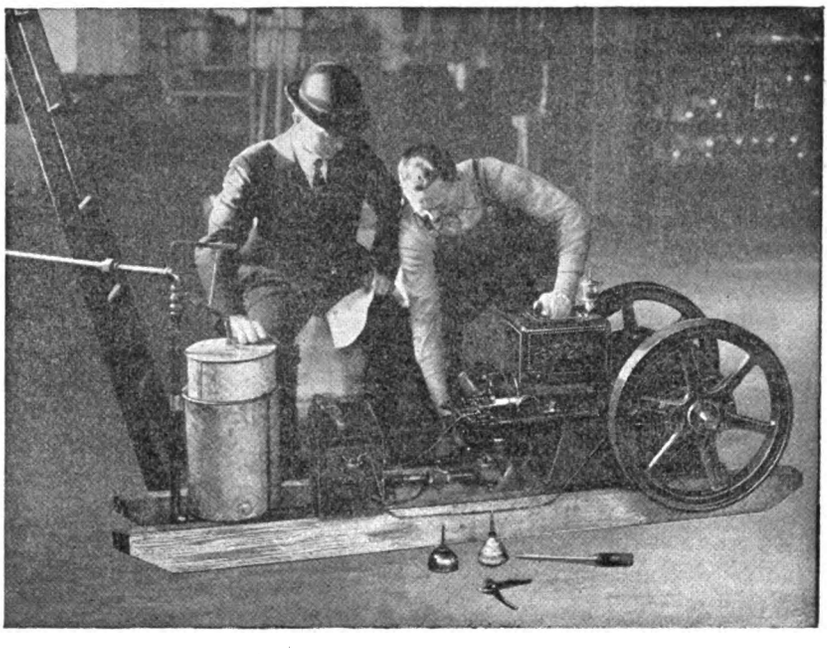
The following minor points, although small individually, will, as a whole, indicate whether or not the manufacturer has taken care to produce a good engine:

Try the compression in the cylinder by turning the flywheels over until the compression is the greatest. Then ascertain whether the compression leaks by the piston or not. In a cheaply constructed engine, one can often hear the air hiss pass the piston when the flywheels are turned in this manner.

Note that the gasoline tanks and pipes have a permanent appearance; that is, the tank is set so that it cannot move, good working gasoline regulation, no leaks, etc. The skids on which the engine is mounted should be of steel, as these are more indestructible and better in every way than wooden ones. The gasoline should be drawn from the tank by engine suction, as this is a simple method and there is no possibility of the gasoline overflowing or leaking out when the engine is not in use.

If the revolving crank and piston rod are nicely enclosed in an iron casting, it is an indication that the manufacturer is spending a little extra money to keep the engine safe and to prevent oil from being thrown out or anything being thrown in. Glance into the battery box and see that the members are neatly arranged. Examine the wood for splits, and see that the cells are securely held so that they will not rattle and loosen the connections. It is also good practise to place a steel cover over the battery box so as to prevent water from getting in.

An engine which is cheap in price will usually prove expensive before it has been run for many months. There are, of course, exceptions to this rule, and it sometimes may happen that the purchaser may obtain a good individual engine of a poor make. The correct price for a good 2½-horsepower engine is considered to be about $90, and about $260 for a nine-horsepower plant.



Pointing Out the 12 Features by Which an Engine Can Be Judged.

BUFFALO DIRECTORS CHOSEN.

At a recent meeting members of Buffalo Automobile Dealers' Association elected the following board of directors: J. A. Cramer, Charles B. Kane, John J. Gibson, Mason B. Hatch, Charles F. Monroe, E. G. Oliver and Howard Smith. Gustave C. Miller and Ralph E. Brown were admitted to honorary membership.

N. A. C. C. Against Time Payments.

Directors Vote to Institute a Broad and Vigorous Educational Propaganda Among Manufacturers.

At a recent meeting of its directors the National Automobile Chamber of Commerce voted to institute a campaign of education among members of the body, advising them that widespread advertising of credit plans relative to buying motor cars on the deferred payment plan and the use of the names of certain cars without the authorization of the manufacturers is detrimental to the industry.

The directors adopted a resolution, which follows:

WHEREAS certain influences are working and certain efforts are being made for the organization of plans which will have a disastrous undermining effect on the stability of the automobile industry, and

WHEREAS it is the opinion of this committee that injurious results will follow the adoption of these methods by any considerable number of automobile manufacturers, and

WHEREAS the methods of deferred payments under consideration are very objectionable from the factory standpoint, and are objectionable to a large degree from the dealers' standpoint, and have a disastrous effect upon the purchasing public, which will unavoidably react injuriously, now, therefore, be it

RESOLVED that a broad and vigorous campaign of education be conducted by the National Automobile Chamber of Commerce, instructing and enlightening its membership along these lines and calling their attention to the fact that methods, which on superficial consideration seem to have merit, are in reality potent forces for destroying the foundation on which our industry has been builded, and that every effort be made to encourage the membership to avoid adopting policies which will undermine the stability of the industry and to encourage them to pursue and develop those policies which can alone maintain and continue permanent success.

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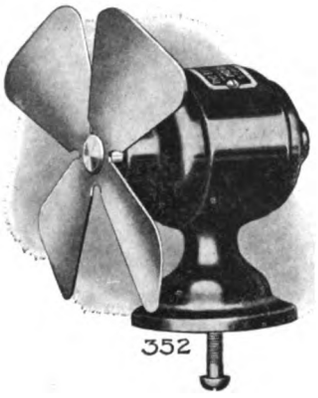
MOTOR CAR ACCESSORIES AND EQUIPMENT.

RADIATOR ORNAMENT.

The Robbins & Meyers radiator fan is a dignified and strikingly attractive ornament, one that is distinctive and adds



to the appearance of the car. The fan is operated by the air currents caused by the motion of the machine. It will spin swiftly at the lowest car speeds and the rapidity of rotation increases proportionately to the rate of the car. Statement is made that when revolving in the sunlight the blades produce the effect of a radiant disc, scattering the sunbeams in a glittering spray.

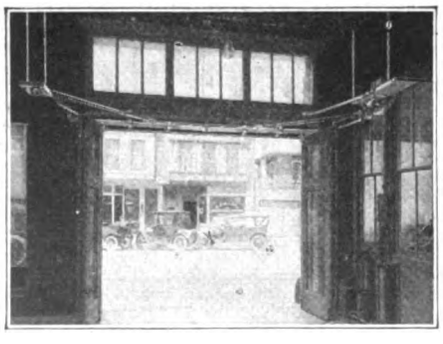
A handsomely polished, baked gloss black enamel finish is applied to the body of the fan, and the blades are finished in nickel or polished brass as desired. The fan weighs about one pound net and the diameter of the blades is four inches.

Manufactured by the Robbins & Meyers Company, Springfield, O. List price, $1.50.

GARAGE DOOR OPENER.

A time saving device recently placed upon the market is the Stewart electric door opener and closer, shown in the accompanying illustration. It is adapted to both single and double doors, swinging, sliding and rolling up. Besides being used profitably by the garage, it is applicable to warehouses, roundhouses, refrigerators, fire doors, etc.

The machine consists of a motor, re-



duction gears and drum, all of which are mounted on a single base. Other equipment includes push buttons, relay, switch, steel cable, etc. The operation is simple. The electric wires can be connected with a switchboard on the desk in the office. A mere push of a button will open the door. Other buttons can be located at different points in the garage so that anyone can open or close the door. An important feature is that the door can be fully or partially opened or closed at the will of the operator.

The simplicity and low cost of operation are features that should tend to make the installation of this machine a profitable investment for the majority of garages. Another point well worth consideration is that satisfaction will prevail among the patrons, as the door can be opened the instant that the horn is sounded.

Manufactured by the Richards-Wilcox Manufacturing Company, Aurora, Ill. Detailed information supplied on request.

MOTOR INDICATOR.

The purpose of the Climax motor indicator is to provide a means whereby the operation of a motor may be conducted within a greater range of safety and to fortify even the veriest novice against danger by its registry of the exact operating conditions existing within the motor. This is accomplished by merely reconstructing the present type of pressure gauge and oil sight feed instru-

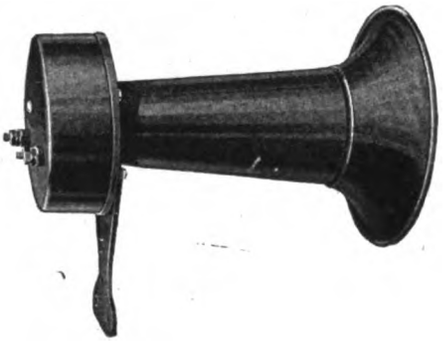
ments and combining a motor indicator for registering the temperature of the oil into one instrument. The device is affixed on the dash in plain view of the operator.

The pressure gauge is designed upon a principle which is not effected by high pressure when the motor is cold. The oil sight feed allows a small quantity of the oil to pass through this gauge so that the operator can determine whether the oil is circulating properly. The purpose of the motor indicator is to register the temperature of the circulating oil on the thermometer as it passes through the gauge. Should the quantity of oil diminish in a motor, a rise in temperature due to this fact would be indicated. Should the circulating of the cooling water, a late spark, a rich or lean mixture be present, a high temperature would also be indicated by this instrument.

Manufactured by the Climax Motor Devices, 759 Rose building, Cleveland, O. List price, $5.00.

GARFORD ELECTRIC HORN.

The Garford electric motor auto horn, shown in the accompanying illustration, produces a blast which can be heard

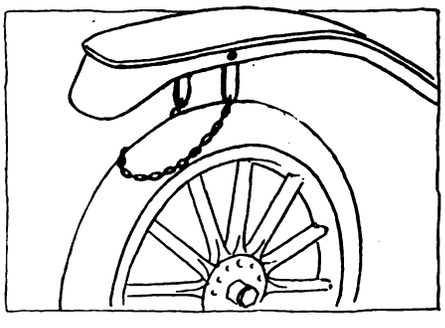


further than the object can be seen, yet the sound is not objectionable to the occupants of the car. A feature of this instrument is that the cam wheel, which acts directly on the diaphragm projection, is located on a shaft between two bearings, thus eliminating strain. The diaphragm and ratchet are made of specially hardened steel and are guaranteed not to crack or buckle. Slight pressure applied to the button, which can be mounted anywhere or at any angle, assures positive contact. Dry cells can be used to supply current for operation. The instrument is beautifully finished with two coats of baked black enamel, satin finish.

Manufactured by the Garford Manufacturing Company, Elyria, O. List price, $7 complete.

WILD'S TIRE GUARD.

All motorists understand that nails and other sharp articles are readily picked up on the road by the tires and that unless removed promptly will do great damage. Wild's tire guard, illustrated herewith, is designed to prevent this condition and thus save the operator annoyance, loss of time and expense. It is a flexible light chain held over the axis and in contact with the tire in the form of a loop by brackets attached to the fenders. The purpose of the guard is to prevent any articles from remaining in the tire for more than part of a



revolution, thus resulting in a clean tire at each revolution of the wheel.

Manufactured by the Motor Car Supply Company, 1311 Nicollet avenue, Minneapolis, Minn. List price, $2 per set.

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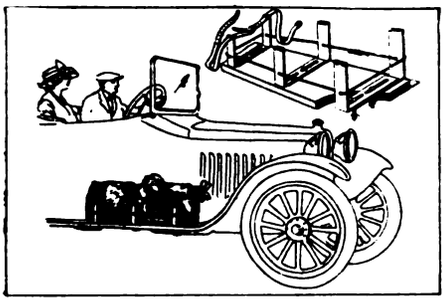
DURAND CARRIER.

To the tourist the Durand carrier is indispensable, as it allows the luggage to be carried on the running board. It



has capacity of six or seven ordinary suit cases and quantities of robes, cloaks, etc., which are kept clean and dry and are handy when needed.

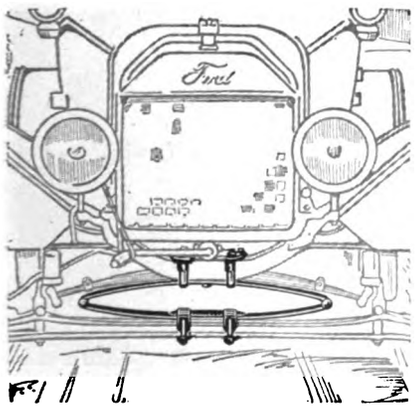
The carrier consists of three metal upright arms, each fitted with two leather straps, bolted upon the running board. The luggage is held in place by these upright arms. To fit articles of various sizes the carrier is made adjustable, the operation requiring simply the loosening of thumb nuts and sliding the arm, as illustrated herewith, either out or in as required. If the rack is not needed it can be removed from the running board by unscrewing thumb nuts.

The Triplex, or three-arm rack, is used for large cars and the Duplex for smaller types. The device is so designed that it does not interfere with the rear door, and when loaded lightly the front door can be used. The complete outfit includes the rack, six straps, rope and waterproof cover.

Manufactured by the Durand-Ferry Manufacturing Company, 260 National Life building, Chicago, Ill. List price of Duplex, $6.50; Triplex, $8.

TWIN-SAFETY CHECK.

The function of the twin-safety check, shown herewith, is to prevent side sway of the Ford car, check rebound and stiffen the front axle. Its installation is said to be an added element of safety. Statement is also made that it effects saving in tires by allowing the operator to steer in a straight course and greatly



lessens small skids and side sways. Many types of shock absorbers raise the front end of the car and change the alignment so that the front wheels are apt to lock when turned to the extreme. This device will serve as an auxiliary for any shock absorber and will absolutely prevent locking of the wheels. Installation can be accomplished by the average person very quickly, as there are no holes to drill, and every part is ready for attachment.

Manufactured by the Twim-Rim Company, Inc., 103 Massachusetts avenue, Boston, Mass. List price, $3.

HACO TIRE LOCK.

Police records show that thousands of dollars worth of automobile tires are stolen each week. The only satisfactory way to prevent these thefts is to secure the spare tire with a reliable locking device. One which is worthy of consideration is the Haco tire lock, shown in the accompanying illustration. It is designed for use on 1916 model Buick, Maxwell, Chevrolet, Saxon, King, Briscoe, Hollier and all other cars using the same type of tire carrier. From the

illustration it will be noted that the construction is simple and incorporates a Yale padlock. The finish is in heavy black enamel.

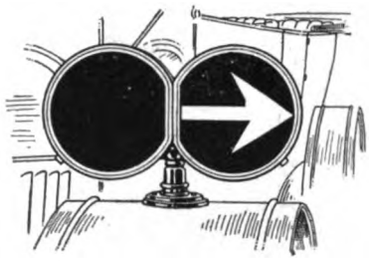
Marketed by the Howard Automobile Company, San Francisco, Cal. List price, $2.

AUTO DIRECTION SIGNAL.

Statistics indicate that 65 per cent. of automobile accidents are due to the fact that the drivers gave the wrong signal, or that the signals given were either unseen or misunderstood. The maker of the Auto Direction Signal declares that if cars were equipped with his signal such accidents would be practically impossible.

These signals, one of which is illustrated herewith, incorporate the use of flash lamps on which are illuminated arrows that can be seen either at day or night at a distance of at least 100 feet, which is ample under most conditions of traffic. They are operated usually from the steering column by pressure on the two buttons provided, and are located at both front and rear of the car. When it is desired to signal a right hand turn the button at the right is pressed and the lamps behind the arrows indicating the direction of turn are illuminated. For a left turn the left button is pushed down. For a full stop the operator pushes down both buttons simultaneously and instantly the stop arrow is shown at both front and rear.

The signals can be easily attached to



any car having electrical equipment, and they are an ornament rather than a detriment to the general appearance of the machine. All wiring is concealed under the fenders and body and no clumsy brackets are used.

Manufactured by the Auto Direction Signal Company, 505 Fifth avenue, New York City. List price of complete equipment ready for use $35. Descriptive circular furnished to inquirers.

SPEE-DEE HAND CLEANER.

Spee-Dee hand cleaner is a compound which is said to effectively remove grease and dirt from the hands without the use of water. It is guaranteed to be non-injurious to the skin. This solvent can also be mixed with water for cleaning oily motor parts.

Manufactured by the States Chemical Company, Chicago, Ill. List price, 15 cents per can.

STEVENS COMPOUND PUMP.

Inflating tires by means of a hand pump has always been considered a laborious task and in the majority of cases has been the cause for motorists using tires that are underinflated. There are hand pumps, however, that are designed to relieve the hard labor, and one of the best known of these is the Stevens No. 99 pump, which is of the compound type. One of the cylinders has a bore of 3½ inches and the other two inches. In operation the air is pumped through the larger cylinder into the smaller and the resulting compressed air is then passed on into the tire of the tank. Brass is used throughout in the cylinders, bases and ground valves. The pump is guaranteed to maintain 200 pounds pressure, and each is supplied with three feet of high-grade hose and improved Acorn connection. A hard

wood base and operating lever are also included.

Manufactured by Stevens & Co., 272 Broadway, New York City. List price, $12. A pressure gauge is furnished for $1 extra.

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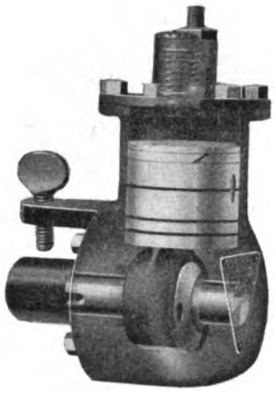
DETROIT GEARLESS PUMP.

The Detroit gearless tire pump has been received with great favor by motorists everywhere. It is constructed on



the same principle as a motor, the piston drawing in air as it retires and forcing it into the tube on the upward thrust. The cardinal feature is the method of attachment to the motor. A connecting spindle is slipped onto the crankshaft hub, the pump attached and the motor started. It is apparent, of course, that this pump is only designed for self-starting cars. The device can be attached or detached in a half minute and is guaranteed to pump air free from oil spray. When not in use it can be carried in the tool box with tube and gauge attached.

It is understood that dealers throughout the country are having great success with this pump because they do not have to spend any time attaching it. It is sold ready packed in a carton.

Manufactured by the Detroit Accessories Corporation, Detroit, Mich. Inquiries solicited.

O-SO-EZY POLISH.

A striking development of the motor car industry this year has been the decision of a number of the large companies to impress upon the car owner the necessity of affording proper care to the appearance of a car after it has been purchased. In furtherance of this plan,

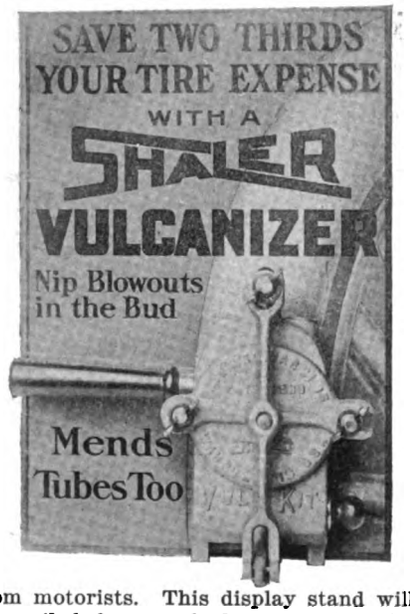
the manufacturers of the Buick, Briscoe, Chevrolet, Chalmers, Detroiter, Grant, Inter-State, King, Oldsmobile, Paige, Reo, Saxon, Scripps-Booth, Winton and Detroit Electric cars are including a can of O-So-Ezy cedar oil polish as part of the regular equipment of each car sold.

The maker of O-So-Ezy guarantees the polish to contain no acid or abrasives. The manufacturers who have already adopted it made exhaustive tests before deciding to recommend it to buyers of their cars. It is understood that the list given above will be greatly augmented shortly.

Manufactured by the O-So-Ezy Products Company, Detroit, Mich.

SHALER DISPLAY STAND.

The accompanying illustration shows one of the silent salesmen furnished to dealers to help them increase their business on Shaler vulcanizers. It consists of a metal background, lithographed in colors to show a representation of an automobile tire, upon which a regular stock vulcanizer is clamped exactly as if in operation. This novel method of illustrating the purpose of the article is bound to attract a great deal of attention



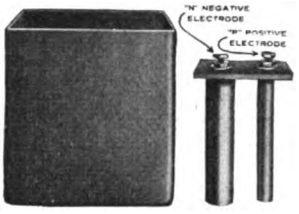
from motorists. This display stand will be mailed free to dealers carrying the Shaler line upon request.

Supplied by the C. A. Shaler Company, 254 4th street, Waupun, Wis.

WARNER BATTERY CHARGER.

A new device of interest to Ford car users is the Warner battery charger. This charger, in conjunction with a storage battery, is said to greatly improve the present lighting system of Ford cars. It is a specially constructed "electrolic" or chemical rectifier. The manufacturer states that this type has been used heretofore only in connection with high voltage lighting circuits for charging batteries. It consists of a suitable jar, a metallic solution, a negative electrode and a positive electrode, four parts in all. It is six inches wide, seven inches long, eight inches high and weighs 12 pounds.

The charger acts as an electro chemical valve or automatic switch, permitting current to pass through it in one direction only, from the negative to the positive electrode. It is connected in one side of the circuit between the six-volt battery and the Ford magneto, and permits only the positive current impulses to pass through into the battery. No current can get through the rectifier in the reverse direction, making the use



of an extra switch or automatic cutout (for disconnecting the magneto from the battery when the engine stops) unnecessary.

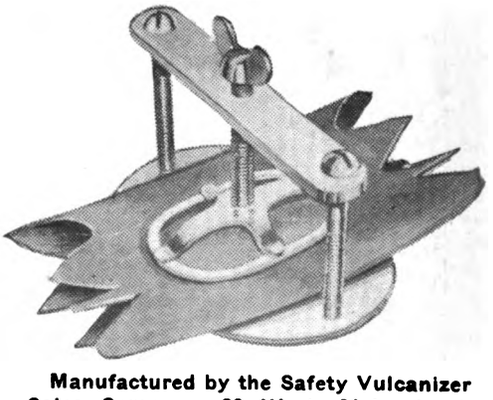
The normal capacity of the Warner battery charger is three amperes. It will stand a much higher rate for short periods, and in fact will rectify all the current the magneto can supply. The average charging rate with a six-volt battery is about one ampere. It is pointed out that this rate will not injure even a fully charged battery.

This battery charger is very inexpensive to maintain. It is only necessary to add a little water occasionally to replace that lost by evaporation and possibly once a year a new solution and a new positive electrode may be required.

Manufactured by the Electrical Equipment Company of America, Davenport, Ia. Price, complete, $8.50.

SAFETY VULCANIZER.

The only practical method of repairing a punctured inner tube is to vulcanize it. This work has formerly been done by expert workmen, but at present there are small vulcanizers on the market with which any motorist can make a perfect tube repair. One of the best of these is the Safety vulcanizer, illustrated herewith. It is so simple that even a child can make an expert and permanent repair regardless of conditions. The operation consists simply of adjustment of the clamp and the application of a lighted match. Attached to each patch is a cartridge, containing the correct number of heat units to properly vulcanize and cure the patch. Overcuring or undercuring is said to be an absolute impossibility. As there is no flame the process is absolutely safe.



Manufactured by the Safety Vulcanizer Sales Company, 23 West 31st street, New York City. List price of complete outfit, including 12 Safety patches, $2.

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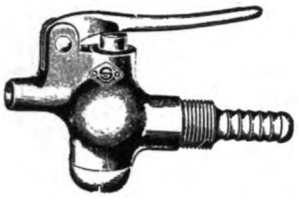
BLOW COCK AND CLEANER.

The Stevens automatic blow cock and cleaner, illustrated herewith, is almost indispensable to the equipment of up-to-



date garages and machine shops. It is designed for use in connection with the air storage system, and is most convenient and satisfactory for dusting out cars, cleaning motors and parts of the running gear, removing chips from the bench and machine tools, and innumerable other purposes.

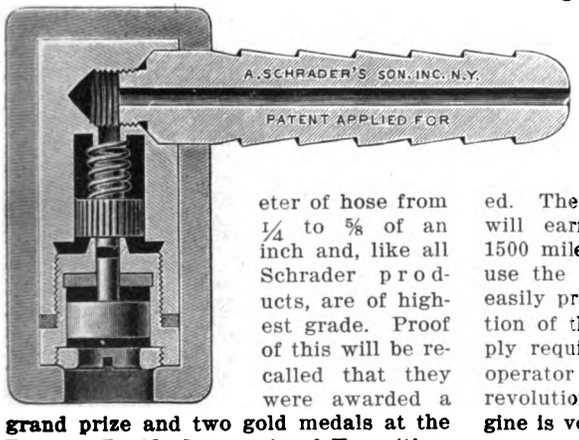
The valve is of simple, but rugged construction and will afford unlimited service. It is provided with a ground in metal to metal seat, and the convenient position of the handle gives instant and positive control of the air supply.

Manufactured by Stevens & Co., 375 Broadway, New York City. Complete description and price on request.

SCHRADER INFLATING VALVE.

Free air service is an expense to the repair shop or garage proprietor and any device that will materially assist in curtailing this should be of special interest to them. That is the chief purpose of the Schrader automatic inflating valve, which is shown herewith, it being designed to guard against any waste of air after patrons have inflated their tires. When fitted to the end of the hose air can only be obtained by pressing the nozzle of the inflating valve against the tire valve, which opens the check in the angle valve and allows the air to pass into the tire. The instant that the pressure is removed the inflating valve automatically shuts off the supply. In this way the Schrader valve affords insurance against waste of air before, during and after inflation.

The valves are made to fit any diam-



eter of hose from ¼ to ⅝ of an inch and, like all Schrader products, are of highest grade. Proof of this will be recalled that they were awarded a grand prize and two gold medals at the Panama Pacific International Exposition.

Manufactured by A. Schrader's Son, Inc., 800 Atlantic avenue, Brooklyn, N. Y. List price, $1.

AUTOFLEXILYTE.

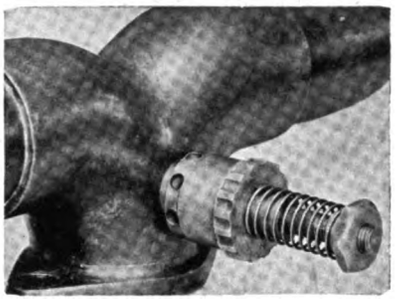
The Autoflexilyte is designed to be clamped to the dashboard of the car, and is held there by a special clip which makes it possible to use it as a speedometer light. Owners of commercial and pleasure cars will find this lamp to be valuable equipment, as it is instantly available in any and all positions. This is made possible by a 10-foot extension cord which can be pulled out for its entire or any fraction of its length required and then locked.

Manufactured by Henry Cole & Co., Boston, Mass. Descriptive circular and price on request.

RIGHT GASOLINE SAVER.

The Right gasoline saver, shown in the accompanying illustration, is in principle an automatic relief valve that depends on the engine speed for operation. It does not interfere with the slow idling of the motor, nor does it decrease its power on a hill or while accelerating. Its function is to admit additional air to the cylinders when the engine has attained a predetermined speed.

The maker guarantees to the user a



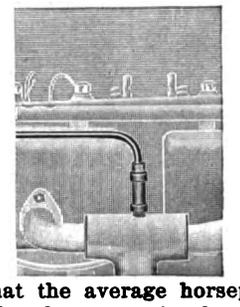
saving in fuel of 30 per cent. Accumulation of carbon is said to be prevented and the engine is made to run smoother. The device is designed to fit any manifold and is adjustable to each particular motor. When once properly set, further adjustment is unnecessary.

Manufactured by the Right Motor Specialties Company, 1322 Michigan avenue, Chicago, Ill. List price, $5.

GAS ECONOMIZER.

The guarantee accompanying the automatic gasoline saver and carbon remover shown in the illustration herewith is that if it does not afford a greater mileage on less gasoline after a 30 days' trial, the purchase price will be refunded. The manufacturer advises that it will earn its purchase price in every 1500 miles of operation, and that by its use the accumulation of carbon can be easily prevented. The method of operation of the carbon remover feature simply requires that twice a week the car operator sets the motor to run at 600 revolutions per minute and when the engine is very warm pours plain water into the top of gas economizer. In this way the water is converted into steam, which is one of the best known carbon removing agents. The steam loosens the carbon that may have accumulated and allows it to be ejected with the exhaust.

As regards its fuel economy, recent dynamometer tests conducted by a prominent automobile engineer deter-



mined that the average horsepower developed by the motor in the tests was greater with the economizer than without, while the fuel consumption was less.

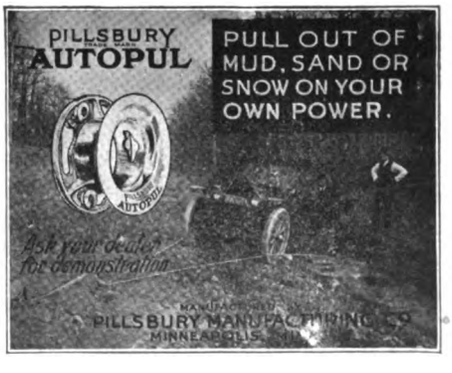
The instrument is designed to fit any type of gasoline motor and requires no adjustment. In view of the present high price of gasoline and the numerous advantages to be gained by its use, this device is exceedingly valuable equipment to have.

Manufactured by the Auto Economy Company, 223 West 49th street, New York, N. Y. List price, $3. Write for descriptive circular.

PILLSBURY AUTOPUL.

The Pillsbury autopul, illustrated herewith, is a device designed to enable an operator of an automobile or truck which has lost traction to utilize its power to get out of the trouble. The equipment consists of two specially constructed winding drums, or reels, 50 feet of Manila rope with a hook spliced in each end, and all necessary locking nuts and bolts. The drums attach to each rear wheel hub flange by special projecting locking nuts and are easily locked without the aid of tools.

The rope, or cable, which is used for truck models, is hooked into a small opening in each drum and wrapped once around to relieve the strain from the small hook. The rope is then carried forward or backward from the under side and anchored to a stake, telegraph pole or any other stationary object. The motor is then started and the slipping wheels cause the cable to be wound



around the drums and gradually pull the machine onto firm surface.

Manufactured by the Pillsbury Manufacturing Company, 322-24 Hennepin avenue, Minneapolis, Minn.

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HEADLIGHT ADJUSTERS.

Traffic authorities in several states have adopted regulations compelling motorists to eliminate the glare from the

headlights. One of the best methods for accomplishing this end, without forfeiting any of the light volume, is to tilt the lamps slightly downward. This may be done by bending the props, but a much easier and more workmanlike method is achieved by using the C-S headlight adjusters, one of which is shown herewith. An accurate adjustment can be made quickly by anyone and with a small wrench.

A set of C-S headlight adjusters consists of four adjustable auxiliary supports, mounted one between each lamp lug and the prop, and they can be used on any lamp that is mounted on a forked prop. Two styles are made. Type A is designed for lamps that have set screws in the lugs and type B for lamps which are held in position with a cap nut.

Manufactured by the Culver-Stearns Manufacturing Company, Worcester, Mass. List price, $2 per set.

A-W CONVERTIBLE TOP.

Illustrated herewith is an all-weather convertible top, which affords all the advantages and conveniences of a one-man touring type and the full glass enclosed limousine. The top is somewhat of a departure from other convertible designs in that it affords the motorist of moderate means with a construction which is adapted to spring, summer, fall and winter service and without the expense of maintaining two distinct types of bodies. It is of light construction, increasing the weight of the car only about 30 pounds, thus allowing its use without altering or strengthening any of the car parts.

One of the distinctive features is that when the glass panels are removed the top cannot be distinguished from the conventional one-man type. In fair weather the panels can be taken out and the top lowered, affording the use of an open body. With the top raised the glass panels can be attached or removed in two minutes.

These panels consist of French plate glass set in steel frames having lugs fitted into recesses in the moulding. The structure is rigidly retained by an ingenious concealed spring that is operated by the fingers. Weaving or movement of the body and top is not communicated to the panels because of a patented construction of the top proper. When the panels are not in use they are stored in a compact, leather case, which is generally placed in back of the front seat, affording a location which is accessible without disturbing the occupants of the tonneau.

The door panels are practically a part of the doors and open with them and incline slightly inward, so that when the doors are closed they are practically spring fitted. This forms a sturdy construction and it is possible to slam the door shut without damage to the panel. This top provides a partially or wholly enclosed body, an advantage in cool weather, when it is desirable to shelter the occupants of the tonneau from dust and cool winds. With the rear panels in position back draughts are eliminated. When all the panels are in place the interior of the car is rain, snow, dust and wind proof and the construction is guaranteed against rattling, squeaking and vibratory noises.

A feature of particular interest is that a distinct design is made for each standard model car, the lines harmonizing perfectly with the body of the car. The first cost is the only cost and there is no varnish to require careful washing. The removable panels make for easy and convenient cleaning.

Manufactured by the Adams-Williams Manufacturing Corporation, 1790 Broadway, New York City. Further information and prices may be obtained on re-

quest by addressing the maker as above.

F. & R. AUTO VISE.

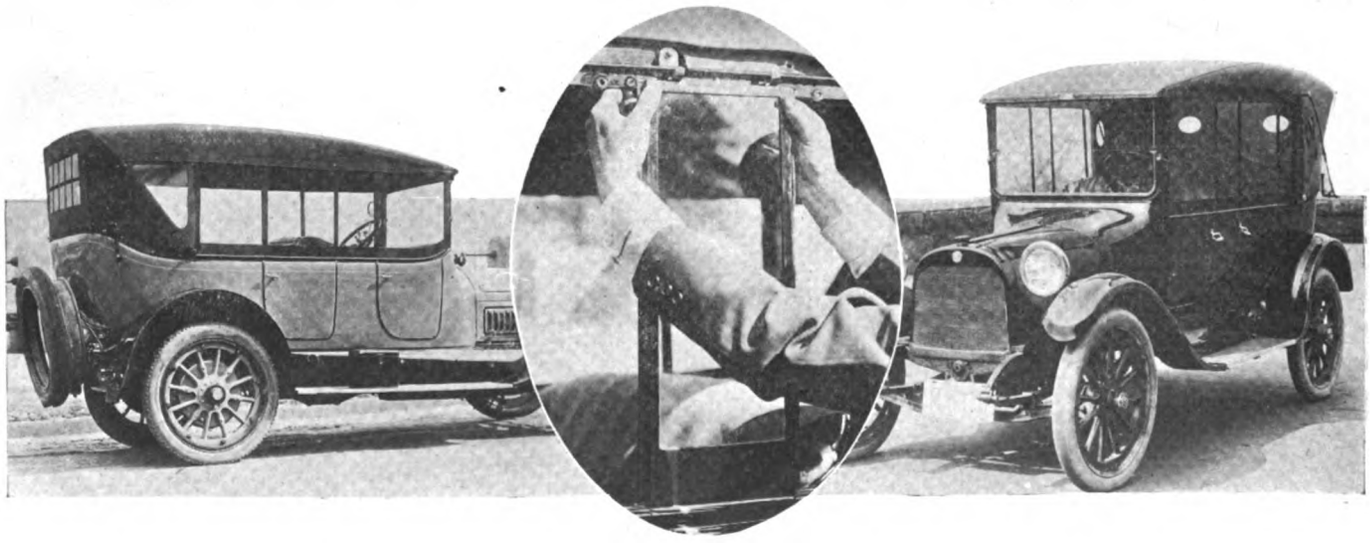
Included in the complete line of F. & R. vises is the one shown herewith, which is designed for use on the automobile. The tool can be conveniently clamped on the running board of the car or on the bench in the garage. Weighing but 7½ pounds, it can easily be carried in the car. The width of the jaws is two inches and they have an opening capacity of two inches.

Manufactured by the Fulton Machine and Vise Company, Lowville, N. Y. List price of vise having plain jaws and finished parts is $8.50. When jaws and finished parts are nickeled, the price is $10.

SIMON'S DIM-A-GLARE.

One of the simplest ways to eliminate the glare from headlights, which is a legal requirement in many states, is to apply Dim-A-Lite to the glass. This is a paste that cannot be rubbed or scraped off.

Manufactured by the Simons Manufacturing Company, Vallejo, Cal. List price, 25 cents per tube.



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FISK

Success of Fisk Dealers
Made Sure
By Our Policy and Product

We recognize in Fisk Tire Dealers a most important, vital cog in our business success. There is probably no concern in this country in which the sales, or distributing end, has been more carefully developed. The needs of the dealer are looked after by more than 100 Direct Fisk Branches ocated in the principal business centers of the country.

Thousands upon thousands of miles have been traveled by men high in the counsels of the Fisk Company in the successful establishment and development of Fisk Branches. The managers, traveling men and inside employees are most carefully selected and in business ability, courtesy and loyalty to the Fisk ideals have grown to be a large and unusual body of men.

It is always the aim to keep the Fisk Line up to a point of attractiveness and high quality that will mean quick sales, good profits and business permanency.

We Are Always Looking for Good Dealers. If Interested, Send to Dept. A. for Our Dealer Plan.

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of N. Y.

Chicopee Falls **Mass.**

Fisk Branches in All Principal Cities

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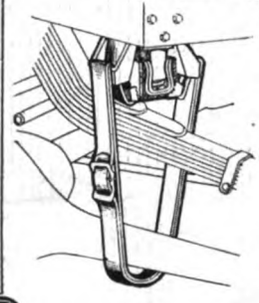
YANKEE
SHOCK ABSORBER
BEST IN THE WORLD



No. 20 FOR FORD CARS

The one practical shock absorber and Recoil Check. The principle is that of a steel wedge working between leaf springs.

NO BUMPS. NO SHOCKS.

Adjustable to all loads. Easy to attach. A wrench is the only tool necessary.

Set of Four $14

Write for special trade discount

SIMPLEX AUTO SPECIALTY CO.
731 Woodward Ave., Detroit, Mich.

Yankee Shock Absorber No. 20 for Large Cars, Set of Four $20

S. J. R.
BOULEVARD ROADSTER
$995

Four-Cylinder Motor,
3 1-8 x 4 1-2, en bloc
Cantilever Springs
110" Wheelbase
Houk Wire Wheels

SJR

Dealers: Write for Our Proposition.

S. J. R. Motor Co.
126 Massachusetts Avenue - - BOSTON, MASS
75-8

SELL SULLIVAN TRUCKS

One of the few staple and practical trucks on the market.

Our selling policy and proposition is the most liberal ever offered to the trade.

One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
Rochester, New York

WATERHOUSE
WELDING OUTFITS $42

The Standard Welding Equipment of the Nation.

Before you buy any welding outfit learn about the Waterhouse. In any shop it will bring business and big profits.
Write for our welding instruction book, free at request.

WATERHOUSE WELDING CO.
3 Pelham Street, Boston, Mass.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUG. 24, 1912, OF

THE ACCESSORY AND GARAGE JOURNAL.

PUBLISHED MONTHLY AT PAWTUCKET, R. I.

For April 1, 1916.

State of Rhode Island, County of Providence.

Before me, a Notary Public, in and for the state and county aforesaid, personally appeared William H. Black, who, having been duly sworn according to law, deposes and says that he is one of the owners of the Accessory and Garage Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the act of Aug. 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

PUBLISHER, W. H. & D. O. Black, Jr....Pawtucket, R. I.
EDITOR, W. W. Scott.....Pawtucket, R. I.
MANAGING EDITOR, W. R. Bickford....Pawtucket, R. I.
BUSINESS MANAGER, W. H. Black....Pawtucket, R. I.

2. That the owners are:

W. H. BLACK.....Pawtucket, R. I.
D. O. BLACK, JR.....Pawtucket, R. I.

3. That the known bondholders, mortgagees and other security holders owning or holding one per cent. or more of total amount of bonds, mortgages or other securities are:

M. J. BLACK, Mortgagee.....Pawtucket, R. I.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

(Signed) WILLIAM H. BLACK, Co-Partner.

Sworn to and subscribed before me this 6th day of April, 1916.

(Signed) ROSCOE M. DEXTER, Notary Public.
[Seal] (My commission expires June 30, 1917.

Safety First

Take no chances on Slippery Pavements and muddy roads.

Equip all Four tires with

Weed Anti-Skid Chains

Universally used—Increasing demand—Easily handled—No dull season—No dead stocks.

Sold by all Reputable Dealers

AMERICAN CHAIN CO. INC., Bridgeport, Conn.
Sole Manufacturers of Weed Anti-Skid Chains
In Canada:—Dominion Chain Company, Limited, Niagara Falls, Ontario, Canada

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FOR ALL AUTOMOBILES

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MAIN OFFICE 41 WARREN ST.
NEW YORK, CITY.
BRANCH ATLANTA, GA.

WE MANUFACTURE AND DISTRIBUTE
13 STANDARD LINES

COMPLETE RE-FACING and RE-SEATING OUTFIT

The Bean Grinding, Re-Facing and Re-Seating Valve Tool Outfits Are Complete.

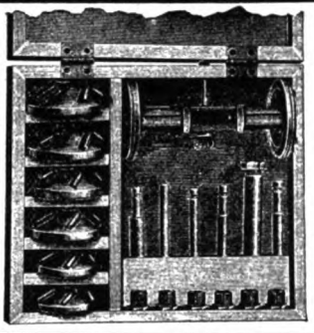
There is just the right tool to fit every valve and seat. The outfit has capacity for the largest garage but not too big for the small shop.

The greatest time and labor saving tools in any shop—affording perfect work and so simple to use that any one can operate them.

Guaranteed and Priced Right

Sold in sets or single tools by all jobbers and dealers.

Makers of Auto and Motor Specialties
Write for catalogue



The BEAN CO. 1ST AVE. BEREA, OHIO.

The Benninghofen Engine

It fires every time with speed controlled by Auto Throttle Governor, not hit-and-miss governed as are other engines. Ideal for shop or farm. Will operate machinery, pump water, run separator, cut feed, etc. Complete ready to run, including gasoline tank, skids, coil, etc., only $35.

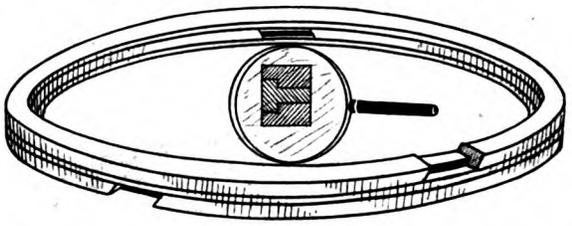
DEALERS WANTED

C. BENNINGHOFEN & SONS.
Dept. 144 **Hamilton, Ohio**

TRADE MARK

TRUMP MULTIPLE PISTON RINGS WILL MAKE ANY MOTOR DELIVER ALL THE POWER

PATENTED



Conserve Power---Save Fuel

The three-section Trump Multiple Piston Ring has been proven by service to be the most efficient, economical and practical compression ring ever produced.

No piston ring could be better designed or made, and none affords the same satisfaction.

Equipped with Trump Multiple Piston Rings the old motor will equal or produce more power than with the original equipment, and it will save largely in fuel consumption. New motors fitted with these rings will develop power considerably in excess of those having ordinary equipment.

These rings insure against all power losses from lessened compression. They are guaranteed to give full compression, greater power, greater flexibility, minimum friction, economy of lubricant, higher efficiency, longer endurance, and prevent smoking, while repair expense will be materially reduced and better service will be realized.

There is a size for every motor. The price, for most sizes, is $1.00 the complete ring.

Write today for detail information of their use, for catalogue and special jobbers' and dealers' discounts.

TRUMP MANUFACTURING CO.,
CROWN POINT 31 Union Street INDIANA

The Manley Garage and Machine Shop Equipment

Designed and built to give economical, dependable service. Time and labor saving equipment that permits automobile repairer to do any size job right and quickly.

Air Compressors ***Portable Cranes***
Arbor Pressos ***Screw Presses***

Our complete line is fully described, illustrated and priced in our catalogue. Every jobber, dealer, garage and repair shop man should have a copy. Free at request.

UNITED ENGINE AND MFG. CO.
HANOVER, PA.

THE MOTOR TRUCK

A magazine for business men devoted to the promotion of highway haulage efficiency. It is the national authority of vehicular transportation.

PUBLISHED MONTHLY

The year $2; the copy 20 cents

Automobile Journal Publishing Co.
Times Building **PAWTUCKET, R. I.**

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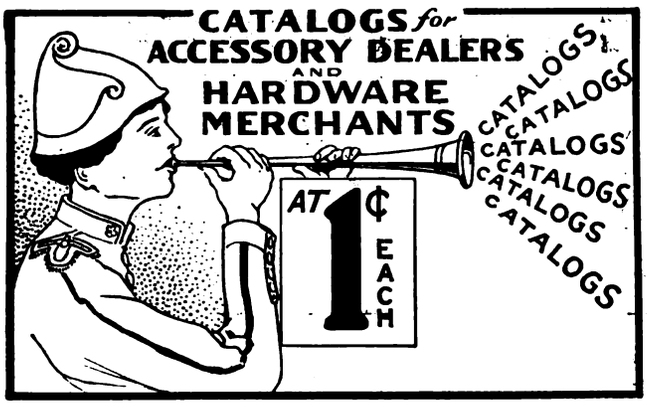
ACCESSORY CATALOGS



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TIRES

5000 Miles or more
commonly run 6000 to 14000 miles.

COG TREAD
Black with Red Sides
Made extra strong and thick. 20% more fabric than average standard makes.

More Fabric Means Less Blowouts

Write for prices and exclusive agency which makes tire selling more profitable.

One of 53 Kinds Millers Vulcanizers

MILLERS NO. 17
Three cavity vulcanizer repairs all sizes and styles 2½ to 5½ in. auto tires all tubes.

FREE Instructions
and book with each outfit at Factory or By Mail

64-PAGE 1916 Catalog on Request

Tire vulcanizers, wrapping machines and many useful devices for tire shops and factories.

Over 50,000 sold since 1894 Estb'd 22 yrs. 1916

CHAS. E. MILLER
Anderson Rubber Works
Anderson, Ind., U. S. A.

FEDERAL
Double-Cable-Base
TIRES
FOR
"Extra Service"
FEDERAL RUBBER MFG. CO.
MILWAUKEE, WIS.

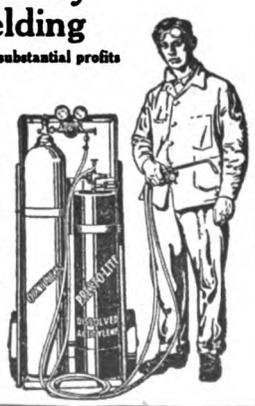
Add to Garage Profits by Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profits

PREST-O-LITE
Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for $60.00. (Canada $75). The average user will also need gas cylinders at an additional cost, and about $10 00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.



The Prest-O-lite Co., Inc.
The world's Largest Makers of Dissolved Acetylene.
309 Speedway, Indianapolis, Ind.
Canadian Office and Factory, Merritton, Ontario

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TO KEEP THE BODY OF YOUR AUTOMOBILE SHINING LIKE A MIRROR USE BLUE RIBBON AUTO BODY GLOSS AND FURNITURE POLISH

Absolutely contains no WAXEY or GUMMY substances.
Does not coat the surfaces and catches no dust.

BLUE RIBBON AUTO BODY GLOSS

is a scientific "tonic" which revives and renews all highly finished, varnished and enamelled surfaces. It keeps the finish flexible and full of life, which prevents the original gloss from becoming dead or dull looking.

WAX and GUM preparations simply coat the surface. The coating soon becomes dead. Then it cannot be removed. This ruins the original gloss and finish. Lastly, repainting and refinishing is the only remedy. Ask any expert or practical painter or chemist.

BLUE RIBBON AUTO BODY GLOSS cleans, renews and repolishes or revives the ORIGINAL FACTORY GLOSS.

Ask Your Jobbers or Dealers or Write Us.

INTERNATIONAL METAL POLISH COMPANY, INDIANAPOLIS, IND.

Manufacturers of the Famous Blue Ribbon Polishes and Soaps.

New Carleton No. 68 Generator

7 Volts, 7 Amperes, d. c. **Steady Light either with or without Storage Batteries.**

COMPLETE ELECTRIC LIGHTING EQUIPMENT FOR USED OR NEW CARS.

MOST EFFICIENT. LOWEST PRICED.

Will Charge any 6 Volt Storage Battery

Simple and positive drive, easy to install, guaranteed to meet all requirements.

SPECIAL EQUIPMENT FOR FORD, SAXON AND METZ CARS. (see cut)

No machining or alterations. A screw driver and wrench only needed.

The Carleton No. 6 Generator Lists at $15

Automatic Cut Outs, Ammeters, Storage Batteries, etc. Also 12 Volt, 10 Ampere Generators.

Dealers' Discounts Will Interest the Trade.

Ford Equipment.

The Carleton Company *172 Summer* ***Boston***

Century Automobile Cigar Lighter, Complete $1.00 Each, F. O. B. Indianapolis

Mabey's Trouble Lamp Complete with Lamp $1.25 F. O. B. Indianapolis

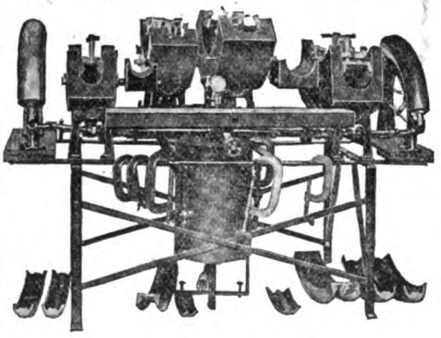
Mabey's Electric Patching Tool for Vulcanizing cuts and holes in tires. Works on your lighting circuit. Price complete $2.75, F. O. B. Indianapolis.

Mabey's Electric & Mfg. Company

1020 Central Ave., Indianapolis, Ind.

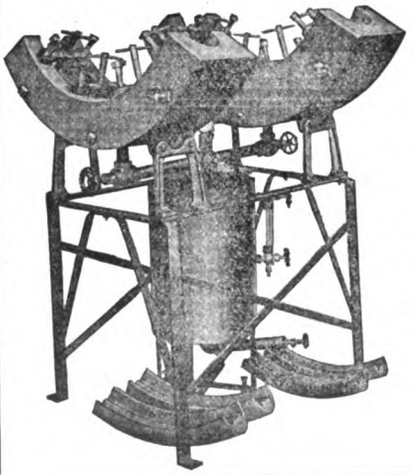
Big Money Double Treading

Lots of work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size cases and tubes from 3 to 5 inches.



Lanier & Crossley,
Monroe, Ga.,
Feb. 5, 1916.

We received the two-cavity outfit bought of you and will say that we were pleased far beyond our expectations. Have had three years' experience in tire repairing, and know what it takes to do good work, and your machine is away ahead of anything on the market.



DOUBLE TREADER

THE NEW AND BEST WAY

Vulcanize them. They wear and look better. Made for new and double treading.

Vanderpool Co.

Springfield, O.

LOS ANGELES
1044 S. Main Street.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Positive Carburetion of Low Grade Gasoline Solved

A Matter of Mighty Importance to Dealers and Vehicle Owners

Note the illustration, it shows how the heat from the exhaust must thoroughly vaporize the gasoline, just at the valve opening. When this result is obtained there can be no waste fuel and full power will be obtained from every ounce of gasoline.

This is the one big question with every car owner. The Wilmo solves it. The cost is reasonable. It is permanent equipment. It cuts gasoline costs, adds more power and greater flexibility to the motor.

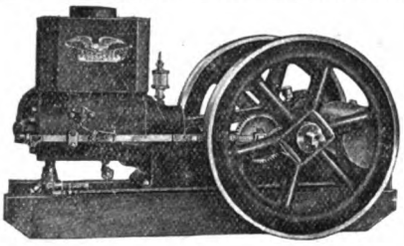
A postal will bring detailed information containing facts that will surprise and interest you.

JOBBERS AND DEALERS DISCOUNT AT REQUEST

WILMO COMPANY 208 La Salle Street, CHICAGO, ILL.

BUY GUARANTEED AIR COMPRESSING OUTFITS

FAULTLESS AIR COMPRESSORS are designed for hard service in the garage or service station or shop. They are single 3x4" cylinder, single-acting, poppet valve, valve in-the-head, air-cooled type, fully enclosed and splash lubricated. Will develop 200 pounds pressure constantly without overheating, and 300 pounds with safety; capacity about five cubic feet of free air at 300 r. p. m. and more than 6½ cubic feet at 400 revolutions. We produce complete systems, including tanks, pipes, valve connections, etc.



FAULTLESS ENGINES, STATIONARY OR PORTABLE, burning gasoline or,—with attachment—gas, kerosene or distillate. Eight sizes, single-cylinder heavy duty type, from 1¼ to 14 h. p., governed, with magneto ignition. Are mounted on skids or iron sub-base or on hand or horse trucks. Guaranteed for five years against defective parts, that they will produce 15 per cent. more than rated power, and sold with a try before you pay agreement.

Write today for air compressor and engine catalogues.

FAULTLESS ENGINE COMPANY, Kansas City, Missouri

Bunting Bearing Bronze IN Cored Bars

Bunting Bearing Metal is standard today with both Manufacturer and Repairman.

Is for sale by most any Jobber or can be purchased direct from us.

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approximate weight
A	1	½	12	2
B	1½	½	12	3½
C	1½	⅝	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

The Bunting Brass & Bronze Co.

727 Spencer Street Toledo, Ohio

STOP THE SPRING BREAKAGE

TYPE B

It's poor policy to risk repeating the annoyance of a broken or weak spring—and the delay—by saving only a very little in buying or selling a cheaper spring instead of a "NEW ERA **BETTER** SPRING."

Don't replace a broken spring with one no better.

Wise dealers—sell only the best—

New Era **BETTER** Springs are the oldest and largest used line for replacement—at same price as from car factories. Made for all cars, GUARANTEED one year against breakage or sagging, graphited between leaves for two years' lubrication.

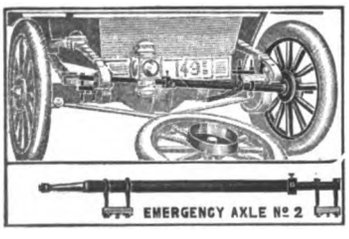
Write for complete lists, discounts—or state requirements and class of business.

New Era Spring and Specialty Company

877 Woodward Ave., Detroit, Mich.

Ask for 16-page catalog—of popular priced "BETTER" Accessories, Shock Absorbers, Bumpers, Indestructible Sparking Contacts, Ford Accelerators, Gasoline Reserve Valves, Fender Braces, Switch Coil Locks, Rear Compartment Locks, etc.

MR. GARAGE MAN.



Are you equipped to bring in a car with a broken axle shaft? If not, get one of Ekerns Emergency Axle No. 2, and you can bring in your customer's car when disabled with a broken axle shaft, or a locked differential. You can attach one of these axles to any make of car in five or 10 minutes, and the car can be pulled at any speed desired.

The Emergency Axle is made of seamless steel tubing provided with clips to go on any width of spring and it is adjustable in length. The spindle is made to take Ford front axle cones so a Ford front wheel and tire can be used, and these wheels can be picked up at most any garage. Try one and you will be equipped at all times to bring in your customer's car. Ekerns' Emergency Axle No. 2 weighs but 28 pounds. Dealers' net price, $8 50 f. o. b. Flandreau, S. D. Five per cent discount may be deducted if cash accompanies the order. We make shipment same day as order is received.

Manufactured by EKERN BROS. FLANDREAU, S. D.

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FREE AIR

COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Automatic Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from 1-4 in. to 5-8 in.

PRICE ONE DOLLAR

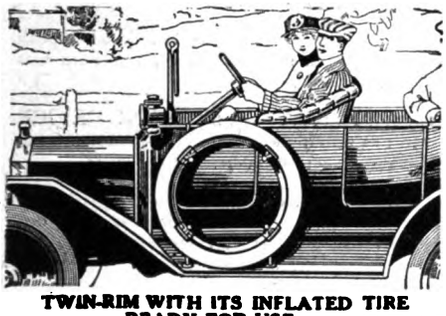
Manufactured by

A. SCHRADER'S SON, Inc.

800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

The Ford Owner Mounts His 30"x3½" Tire



TWIN-RIM WITH ITS INFLATED TIRE READY FOR USE

ON A

TWIN-RIM

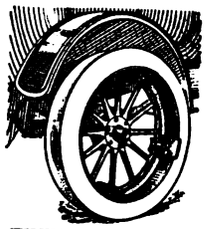
Pat. Jan. 24, 1915

And Carries It Inflated—Ready for Instant Use.

So constructed that it fits both front and rear wheels of a FORD CAR.

No change in wheels or equipment necessary.

RETAILS FOR $5.00 COMPLETE



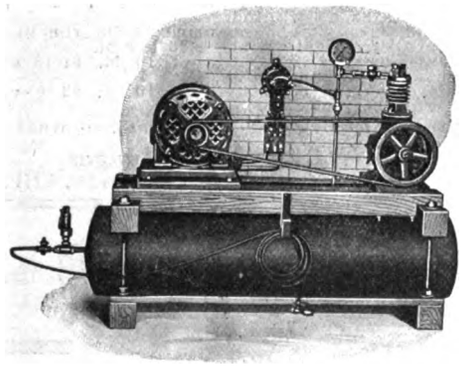
TWIN-RIM IN USE

DEALERS—WRITE US FOR PRICES

TWIN-RIM CO., Inc., 103 Massachusetts Avenue, BOSTON, MASS.

GARDNER

STATIONARY FREE AIR UNIT



FOR

SERVICE ECONOMY DEPENDABILITY

A Gardner Outfit of this type installed in *your* garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY

126 Williamson St., Quincy, Ill.

Singer Bldg, New York City — Fisher Bldg, Chicago — 5 First St., San Francisco

Kimbrough's Never Leak,

Is a liquid which when injected into your automobile or bicycle tire, will heal punctures automatically and instantaneously. This is not a filler. Guaranteed not to injure rubber, will add to the life of your tire—does not interfere with air cushion—occupies 5 per cent of the air space—does not gum or solidify—removes cause of 75 per cent. of blowouts.

Is not sticky—will not freeze—does not hinder vulcanizing—lasts indefinitely—costs but little—one gallon can is sufficient for ordinary car.

This is put in the inner tube—does not interfere with putting in air. This will save your money—save your time—save your temper and make your pleasure trips enjoyable.

Shipped anywhere in the United States charges prepaid, upon receipt of $5.00 per gallon can.

THE DENVER FORD STARTER COMPANY

Suite 327 Century Bldg. Denver, Colo.

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Live Dealers Are Linking Up With

HAVOLINE OIL, The World's Leading Lubricant

"It Makes A Difference"

BY every test, by every sort of performance, Havoline Oil outrivals all competitors. It demonstrated its overwhelming supremacy over the twelve leading makes of lubricants in a competition inaugurated and supervised solely by *scientific authorities.*

The famous Purdue University concedes Havoline's supremacy in every element by which the value of motor oils is measured. Havoline leads the world. In sheer superiority it stands alone—the standard by which all other lubricants are judged.

Smashing Big Season Ahead—Cash In! Cash In!

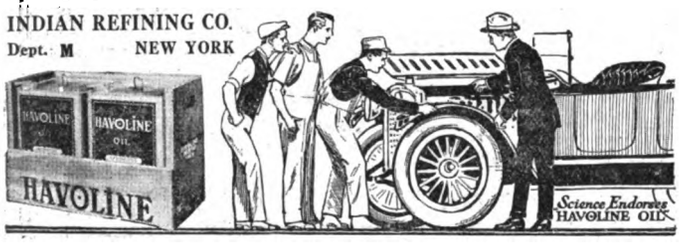
You've only room for "live" sellers this year, Mr. Dealer. Havoline Oil is the "liveliest" of the lot. It's a winner from every standpoint—a winner of friends, of customers and of profits.

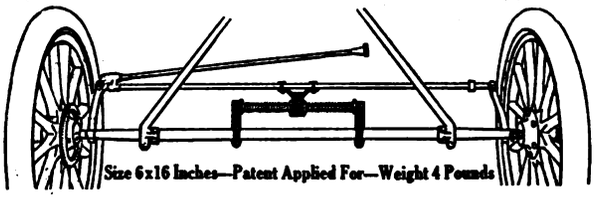
The Havoline sign over your door will mark you a live and reliable dealer. We're boosting Havoline's preeminence to the skies. Cash in on Havoline triumphs, Havoline advertising, Havoline reputation. Get them coming and going! Havoline will do it—so identify yourself.

Get Them

Send for our new dealer proposition—It's a hummer. Get it now. Ask for copies of our booklet, "Havoline Oil Goes To College," to give your customers.

INDIAN REFINING CO.
Dept. M NEW YORK





Acme Steering Device

THE FORD STEERING CONTROLLER

Price Complete - - $3.50

THIS STEERING CONTROLLER is a simple and substantial Accessory of practical value to all Ford Car Owners.

By the pressure of two coil springs acting upon the tie rod, the car automatically tends to a straight course, regardless of holes and obstructions thereby relieving the strain of driving.

The ACME STEERING DEVICE is easy to sell, and appeals to all dealers. The cut as shown is self-explanatory, and Ford Car Owners quickly see what the device will do.

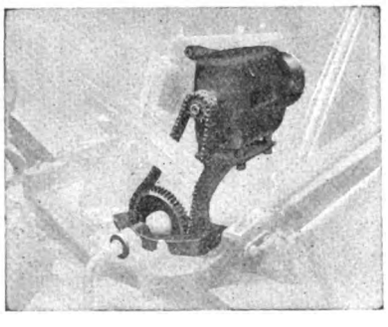
Be the first dealer to introduce the ACME STEERING DEVICE in your territory, and gain this advertising advantage. Write to your jobber or to us for the liberal discount to dealers.

We will send one or more machines prepaid at retail price. To Dealers we will send with the shipment a credit coupon covering discount, which coupon will be received at its face value, by any jobber or by us, to apply as part payment on next purchase.

ACME STEERING DEVICE CO., Mfrs.

1223 FILBERT STREET PHILADELPHIA, PA.

ELECTRIC ISCO SYSTEM



Electric Starting and Lighting Systems for FORDS $75

IT SPINS THE MOTOR

There is ALWAYS a start in the Disco, no matter how cold the day. It doesn't merely turn the motor, it SPINS it.

The Disco is a single unit system, simple, light and compact. It operates with a 12-volt current, insuring a start every time. Its patent yoke bracket maintains perfect alignment and eliminates chain breakage. It is easily accessible, and does not interfere with the accessibility of the Ford engine.

Eighteen American cars are using the Disco as regular equipment. We have a proposition to make to owners, dealers, jobbers and manufacturers. Early requests for territory will be given preference.

Write or Wire Today

Disco Electric Starter Corporation

DETROIT, U. S. A.

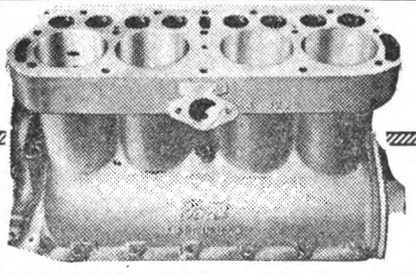
Automobile Mailing Lists 1916

28,108	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
8,123	Ford Dealers, price $17.50, or $3 per M by states.
285	Ford Dealers, Canada, $1.50.
28,463	Auto Garages, price $40, or $2.50 per M by states
29,306	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
45,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
940	Auto Supply Jobbers, price $4 for the list.
4,093	Auto Tire Dealers, price $3 per M.
2,404,150	Auto Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.
643,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

Write for particulars of any list you want.

A. F. WILLIAMS, Manager,

Phone Franklin 1182. 164 West Adams St., CHICAGO



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AUTO, MOTORCYCLE, STATIONARY AND TRACTOR ENGINE CYLINDERS REBORED

Write for prices *Special offer to dealers*

Motorcycle Accessories Company

ST. PAUL, MINN.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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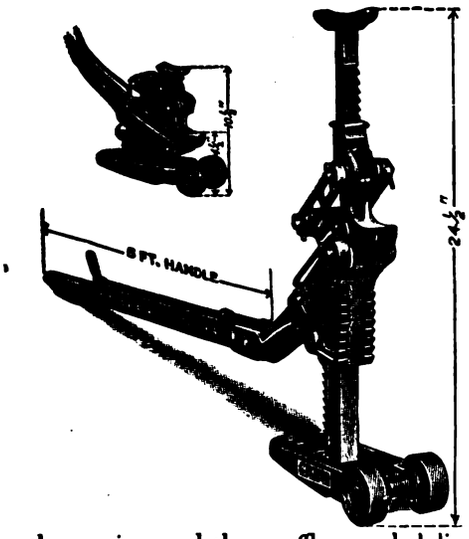
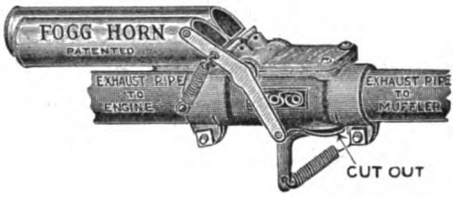
CHANGE IN OWNERSHIP



EXCEL AUTO JACK AND FOGG HORN

THE attention of the trade is respectfully directed to the fact that we have acquired the ownership of the EXCEL AUTO JACK and the FOGG HORN, until recently manufactured and marketed by the Motor Specialties Co. of Waltham, Mass. All orders and inquiries will be given our very best attention.



The FOGG HORN is generally admitted to be the best exhaust horn ever produced for Ford or Metz Cars. It is located between the engine and the muffler, and delivers a full, mellow signal at low engine speeds.

THE EXCEL AUTO JACK is a big, powerful tool for the rapid and easy handling of cars weighing up to 8000 pounds. It is the quickest and strongest Garage Jack made. Indispensable in Garages, Service Stations, Repair Shops, etc. Satisfaction guaranteed or money refunded. Write for quotations and Folder B.

THE RANDALL-FAICHNEY CO., Inc., MANUFACTURERS OF MOTOR SPECIALTIES **76 Atherton St.**

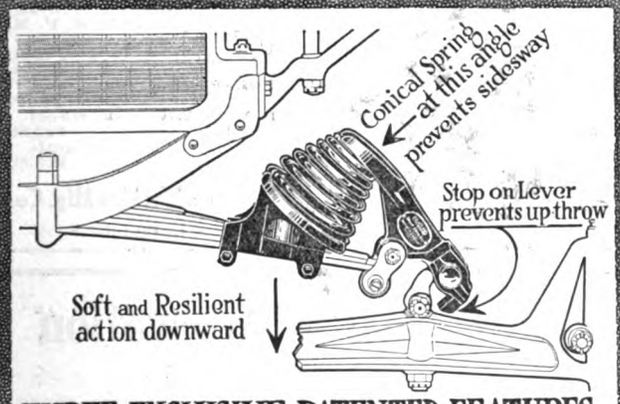
JAMAICA PLAIN, BOSTON, MASS.

Blitz Plugs. *B-Line Oil and Grease Guns.* *Jericho Horns.* *Glaroscopes.*

HASSLER

Shock Absorber

For FORD Cars



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"

— 100000 FORD OWNERS RECOMMEND IT —

WRITE FOR DEALERS TRIAL SET PROPOSITION

$15 for a Set of Four

Robert H. Hassler, Inc.
Indianapolis, Ind.

10

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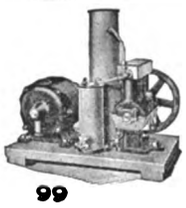
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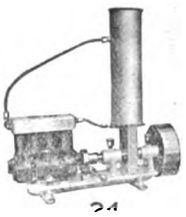
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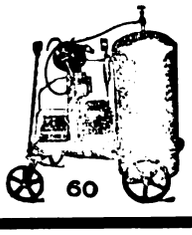
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PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

FREE AIR SERVICE CURB STANDS

Most complete line made.
Most Economical to buy.
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Buy Direct. *Save Money.*

LIPMAN AIR APPLIANCE CO.

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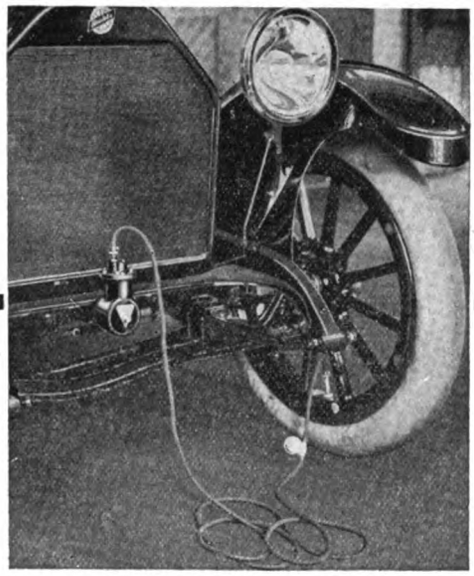


Carried in the tool box—on or off in 30 seconds.

Detachability----Convenience

The **Detroit Gearless Tire Pump** is carried in the tool box with tube and gauge attached. To use it the connection is slipped onto the crankshaft hub and the motor started.

GEARLESS DETROIT MOTOR-DRIVEN TIRE-PUMP

PATENTED AUG. 24, 1915

It is built like your motor. Air is drawn in as the piston retires and the upward thrust forces the air through the tube into the tires. There is no rubber diaphram to wear out.

It is the original crankshaft pump. It is light, compact and can't get out of order.

Ready for Reo, Saxon Six, Hudson, Chandler, Overland-75-83-84, Dodge Brothers, and Studebaker 1914-15-16

DEALERS---WRITE FOR PROPOSITION

Detroit Accessories Corp.

519 Hillger Ave., Detroit, Mich.

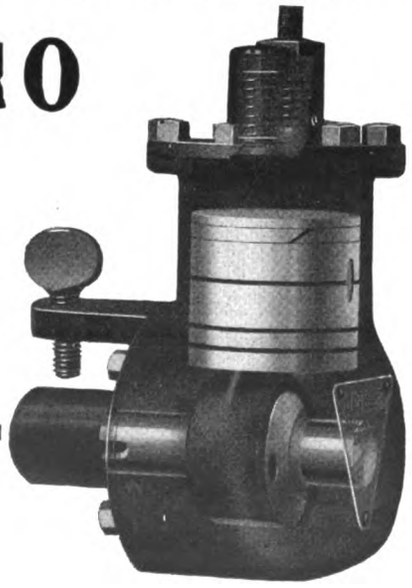
DISTRIBUTORS:

New York: Lowe Motor Supplies Co.

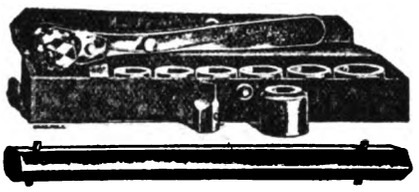
Chicago: Motor Equipment Co.

Pacific Coast: Weinstock-Nichols Co., San Francisco

$10



Free From Oil Spray



DON'T USE A COLD CHISEL

USE THE LANE UNIQUE RATCHET WRENCH

FOR CLOSE AND DIFFICULT WORK

IT TURNS NUTS VERY CLOSE TO THE WALL.

is easily and quickly reversed, sockets will not break or split and fits three standards and automobile nuts.

MADE FOR HEAVY SERVICE

Wrench is machine made. Sockets are turned from steel bars, cold broached and case hardened. Fully warranted. Every repairman should have a UNIQUE RATCHET WRENCH SET.

SPECIAL SETS FOR FORD CARS

Dealers, Jobbers and Garagemen, Write for Trade Discounts.

STANDARD SET Contains:

1 Handle 7 inches in length.
2 Screw driver bits.
7 Sockets to fit semi-finished hex. nuts as follows:
U. S. Standards from 1-4 in. to 1-2 in.
A. L. A. M. Standards from 5-16 in. to 11-16 in.
Cap screw heads from 5-16 in. to 5-8 in.

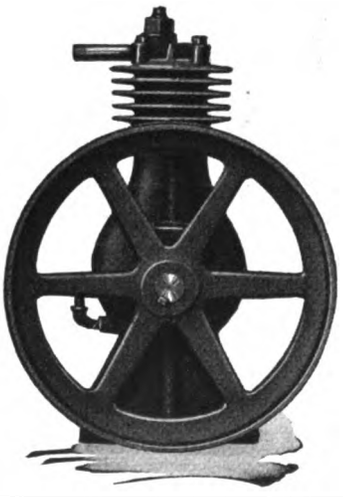
Price in leather case **$2.50.**

THE FORD SET Contains:

1 Handle 7 inches in length.
2 Screw-driver bits.
1 Extension bar 7 in. in length.
SIX SOCKETS to fit all nuts and bolt heads on Ford car, including the cylinder head.

Price in leather case **$3.00.**
Sold by dealers everywhere.

WILL B. LANE, Manufacturer, 180 N. Dearborn Street, Chicago, Ill.



THE "MASCOT" Garage Compressor

Delivers air free of oil. All parts accessible for adjustment without detaching pipe connection.

Removable Bronze Bearings

Size of cylinder.....3"x3"
Speed..300 to 500 R. P. M.
Capacity.....
3½ to 6 cu. ft. per. min.
Pressure...Up to 150 lbs.
Power required.....
.....½ to 1 H. P.
Price with flywheel only $22.50
Price with loose pulley $25.00

Jacobson Machine Mfg. Co.

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Motor Truck Operation

A book devoted to the design, construction, care, repair and maintenance of service vehicles. Non-technically written, dealing with every subject, it is an authority for owners, transportation department heads, superintendents, foremen and drivers. The most comprehensive treatise of the kind published.

Price, postpaid, $1.

Automobile Journal Publishing Co.

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25 Years' Spring Manufacturing Experience Counts

We are pioneers and leaders in the manufacture of automobile springs. We solicit your business on the grounds of economy, durability, all 'round general satisfaction and fair and courteous treatment.

Harvey RACINE **BOLTLESS Auto Springs** are positively guaranteed against settling and breakage. They are made of the finest selected steel and the plates are scientifically formed and tempered on the Harvey patented machines, which make them with an accuracy and uniformity not possible to obtain with hand labor.

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Dealers, Garagemen, Repairmen—

should write for a copy of the Harvey Auto Spring Book. It contains a complete list of springs for over 300 of the leading makes and models of cars—gives sizes, weights, measurements, prices and other valuable information. Mailed free upon request.

Over 10,000 springs carried in stock at factory for immediate delivery. Complete assortment of Harvey Springs also carried by leading jobbers.

WRITE FOR NAME OF YOUR NEAREST JOBBER.

THE HARVEY SPRING CO., 851 17th Street RACINE - - - WISCONSIN

In the Corona Road Race, April 8th,

DIXON'S Graphite Automobile LUBRICANTS

Led the entire field. The winners, O'Donnell, Thomas, Pullen and Tetzlaff, all used Dixon's Graphite Automobile Lubricants.

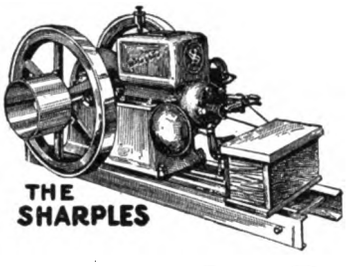
Read what these and other famous racing drivers have to say in booklet "Words of Wisdom" No. 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

Established 1827

G-128



Runs in the Rain

Water has absolutely no effect on our magneto—the Sharples Engine will run perfectly in the pouring rain. Furthermore, the engine makes just as hot a spark when running very, very slowly (for instance when the engine is being started, as when it is running full speed.

The Sharples Engine has Double-Ignition. It has two complete, separate sparking systems, like the best foreign automobiles. **Either** spark will run the engine. **Both** sparks can be used for easy starting. This makes the engine practically trouble-proof.

The New Sharples Double-Ignition

GASOLINE ENGINE

is solidly built for very heavy duty and mounted on non-decaying skids. Gasoline tank is located at lowest point. Gasoline can't possibly drain out. It's pumped up by **suction-feed.** Endorsed by fire underwriters. Speed instantly changed by shifting lever. Doubly inspected and **guaranteed.** Four sizes, 2½ to 9 horse power.

Our liberal contract offers big opportunity to live dealers.

The Sharples Separator Company

Also Sharples Milkers and Sharples Separators

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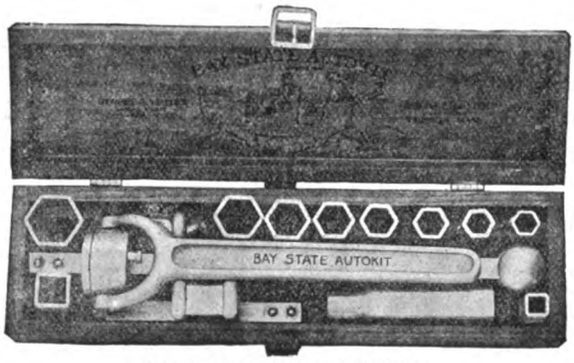
IS HE CRAZY, LAZY OR JUST PLAIN FOOLISH

A Striking Example

Of inefficiency, lost time, unnecessary labor, and at the best a poor job badly done.

In many garages, repair and machine shops you can see repairers doing general work, using indiscriminately chosen tools—wasting labor and doing little but abusing and deteriorating the usefulness and life of the cars on which they work.



BAY STATE AUTOKIT NO. 2

A wrench that does not fit all nuts and bolts is the most extravagant tool that a mechanic can use. The makeshift workman generally uses makeshift tools. The good worker uses the best tools obtainable. He cannot afford to use others.

In the Bay State Autokit there is just the tool for every job. A swivelling, reversible ratchet handle and extension shanks. Complete wrench equipment for any shop, that permits the reaching of nuts, bolts, or cap screws from any angle.

Bay State Auto Kit Wrench Sets are built of the finest materials and are sold in special-built cases. The list prices are;

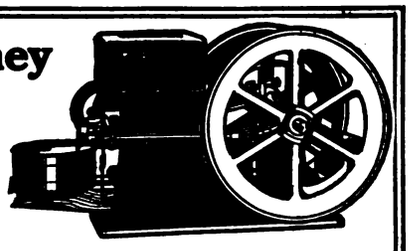
Set No. 1, 31 Sockets	**$10.00**
Set No. 2, 12 Sockets	**7.50**
Set No. 3, 11 Sockets	**4.00**

Sold under a broad guarantee everywhere, or direct. Catalogue and discount sheets at request.

GEORGE A. CUTTER

TAUNTON SALES AGENT **MASS.**

Make Money Selling This ENGINE



GARAGE MEN AND REPAIR SHOP MEN

Here is your chance to handle a high-grade engine at prices that will get the engine business of your locality. One engine will sell another. Our liberal discounts from prices here quoted make you a good profit. Complete line as per list below.

Keco ENGINES

Gasoline, Kerosene & Gas

are absolutely high-grade, made in an independent factory. Engines are center-firing, valve-in-head type, with automobile ignition. Safety spark shift for easy and safe starting. Best of materials and construction—simple to operate—durable—give even speed and low cost power with low repair cost.

SOLD ON TRIAL—Every engine is fully guaranteed for five years. Write for our independent dealers' proposition, and our NO-RISK DEALERS' OFFER. Let us show you the profit you can make with our independent line of engines. Don't wait if you want exclusive sale, but write today.

Manufacturers Engine Company

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Retail Prices:
(F. O. B. Factory)

Stationary Engines	
2 H-P.	$35.10
3 H-P.	52.65
4 H-P.	70.20
6 H-P.	100 00
8 H-P.	140.40
12 H-P.	210.00
Portable Engines	
2 H-P.	$40 15
3 H-P.	60.75
4 H-P.	83.35
6 H-P.	130.10
8 H-P.	176.80
12 H-P.	248.60
Engine Saw-Rigs	
4 H-P.	$128 25
6 H-P.	155 00
8 H-P.	205.00
12 H-P.	272.50

5-Year Guaranty

You can make anywhere from $1500 to $3000 a year above expenses. Your investment to start is small, returns are quick and income cash. Profits are large on every job. The Tire repair business is growing every year. Every city and town offers opportunity for you. Buy only an

AKRON-WILLIAMS TIRE REPAIR EQUIPMENT

The better your equipment, the better your work and the greater your volume of business. Start right. Use equipment which is

Endorsed by 30 Leading Tire Manufacturers We are making an unusual offer to everybody who buys our equipment. You can become a tire repair expert by our plan.

SEND FOR OUR 30 DAY SCHOOL PLAN

You start right. No experimenting. No failures. You become a practical, first-class repair man.

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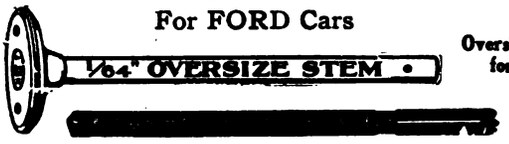
For FORD Cars



Oversize Valves for Motors With Worn Valve Guides

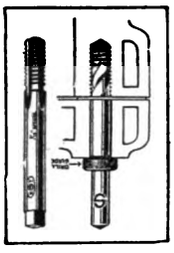
A set of these valves prevents leakage and restores original power and "pep." Easily fitted without taking the motor down. Best quality. Heads electrically welded to the stem.

List Price—Oversize Valves, Each 20c
Regular Size—Same Quality Each 15c

SPECIAL REAMER FOR FITTING OVERSIZE VALVES

Reams out worn Valve Guides to exact size for Oversize Valves. A strictly high grade tool accurately finished.

List Price, Each $1.50

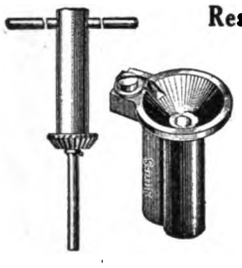


No. 100

Cylinder Tap and Drill Set

This Outfit enables any one to remove a broken cylinder head bolt quickly without taking the head off the motor. No skill is required for the job and there is no risk of injuring the threads. Outfit consists of drill, special bushing and tap.

List Price $1.00



Reseater and Refacer for Ford Valves

Ford owners demand quick, efficient results.

Stevens Reseater and Refacer will put an old set of valves into condition in less than one-fourth the time required by grinding. Valves fitted in this way give better satisfaction, as the seat remains flat and true.

List Price Reseater only $1.50.
Refacer $.75. Per Set $1.50.

Stevens products always give satisfaction.
All leading jobbers carry them.

Established 1899

STEVENS NEW YORK

375 Broadway New York

THIS AMBU BATTERY BOOK—GET IT!

An authoritative work on upkeep, care and repair of electric storage batteries—

"Starting and Lighting Batteries"

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THE MAGAZINE

FOR THE TRADE

ACCESSORY & GARAGE JOURNAL

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(PATENTED)

Remember this:—the difference in price between a poor ball bearing and the best one, is never large. But that difference buys enormous value, in serviceability and satisfaction. In the bearings of a magneto, or lighting generator, or starting motor, such a small price difference may mark the difference between continual trouble and long-time service.

"NORMA" Bearings are used in the best ignition apparatus, lighting generators and starting motors because the makers of these accessories know that "NORMA" Bearings give the kind of service these makers wish to be associated with their names.

Are You "NORMA"-Wise?

THE NORMA COMPANY OF AMERICA

1790 BROADWAY —— NEW YORK

BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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Roller Bearings
SERVICE BRANCHES
ATLANTA-DETROIT-BOSTON-SAN FRANCISCO-NEW YORK-LOS ANGELES-CHICAGO-MINNEAPOLIS-LONDON, ENG.

DEALERS—This Talk is Just for You

Send for a sample order. We make one price to all—the lowest.

Circulars and discount sheets on request.

You can save dollars and add to your prosperity by selling the Martin line of tire covers, water buckets, inner tube cases and similar goods.

These are made of heavy imitation leather. (Not of cheap oil cloth). They are the kind and quality that will please and satisfy the customer.

These values, for the price, are phenomenal.

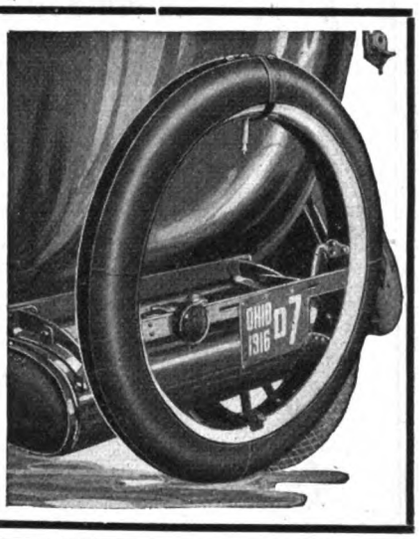
For instance we make a price to you of 85 cents for our style D 34 by 4 tire cover for special hangers and wire wheels.

Our price to you for inner tube cases for single tubes is $8 per 100. They are of good quality water proof materials.

Prices and quality are what interest you. They show the live dealer where to buy to earn the big and easy profits.

We will quote you prices as low as those mentioned on our complete line. If you buy from us it will make 1916 a prosperous year for you.

Orders are not accepted from owners. These prices are exclusively for the trade.



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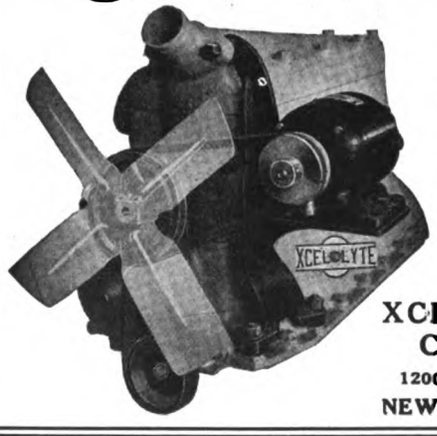
HESS-BRIGHT
BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
The HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA PENNSYLVANIA U S A

XCEL-O-LYTE
LIGHTING SYSTEMS
FORD, OVERLAND



An Exclusive Territory Proposition Open to Dealers.

Ball bearing dynamo. 6-80 storage battery, double-bulb headlamps, tail lamps, dash lamps, automatic cut-out, switch, bracket, driving transmission included in this high grade equipment.

Write for Agency Terms.

XCEL-O-LYTE COMPANY
1200 Xcelo Building
NEWTON, IOWA

THE AUTOMOBILE JOURNAL

Is the oldest Automobile magazine published in America devoted wholly to owners of pleasure cars.

A quality magazine with prestige and circulation that brings results to advertisers.

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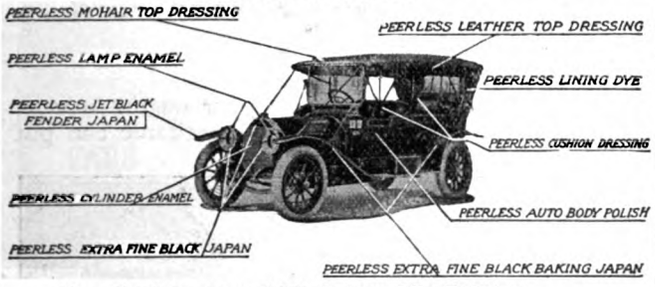
Peerless Automobile Specialties

MAKE OLD CARS LOOK LIKE NEW

It Can Be Done by Auto Painters, Garage Men, Chauffeurs or Owners



Now Used by Over 6,000 Automobile Painters

PEERLESS Mohair Top Dressing—
Waterproofs and renews old and leaking tops
PEERLESS Leather Top Dressing—
Softens and renews old leather tops
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Makes stained and faded linings a black, uniform color
PEERLESS Cushion Dressing—
Brightens and renews old cushion leather
PEERLESS Lamp Enamel—Gloss—
A rich, gloss finish—with one coat air drying
PEERLESS Lamp Enamel—Dull—
A rich, dull finish—with one coat air drying
PEERLESS Auto Body Polish
A fine polish for automobile bodies
PEERLESS Cylinder Enamel—Black—
A gloss, air-drying, enamel stands heat, grease, gasoline
PEERLESS Cylinder Enamel—Gray—
A gloss, air-drying, enamel stands heat, grease, gasoline
PEERLESS Jet Black Fender Japan—
A heavy-bodied, rich black gloss enamel
PEERLESS Ford Top Dressing—
Especially prepared for Ford tops
PEERLESS Anti-Rust Rim Paint—
Keeps tires from sticking, rims from rusting
PEERLESS Extra Fine Black Japan—
Solid covering enamel for all work
PEERLESS Mirroroid—A Varnish Renewer—
A varnish applied with a cloth or brush. It wears
PEERLESS Acid-Proof Battery Box Black—
Stands acid, saves wood and metal from decay

Sold in U. S. and Canada by Jobbers and Dealers of Auto Supplies and Hardware; Also at Garages.

When You Paint Automobiles Use Our Products.

Free book describes each product and gives the amount required for each part of the car. Write us.

The Columbus Varnish Co., Columbus, Ohio

Makers of Fine Varnishes for 23 Years.

Trade Subscription Offer

Including three motoring magazines—one given over to the pleasure car field—another to commercial vehicles and the third to industrial interests. Each magazine distinct.

The lowest rate ever made for leading motoring papers. Write for details.

ACCESSORY & GARAGE JOURNAL

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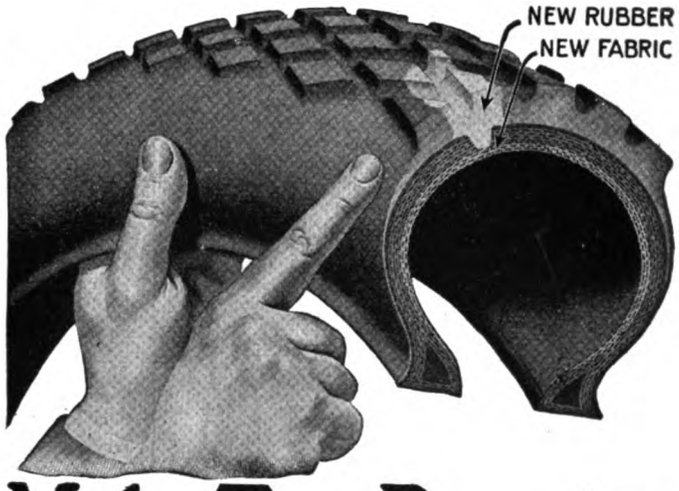


Make Tire Repairs like this—*Easily*

COMPARE this blowout repair made by the Shaler Wrapped Tread method with the usual unsightly repairs on a non-skid tire. It is easier to make Wrapped Tread repairs like this than to put in sections. It requires only half as much material and half the time for preparation and curing. It makes a stronger job than any other method.

These are some of the reasons why Shaler Shop Vulcanizers, using the Wrapped Tread Method and with their temperature regulated automatically, have been adopted by leading tire and car manufacturers, by the United States and other Governments—are sold by practically every auto supply house in this country.

Big Money in Tire Repair Work with a

SHALER
Shop Vulcanizer

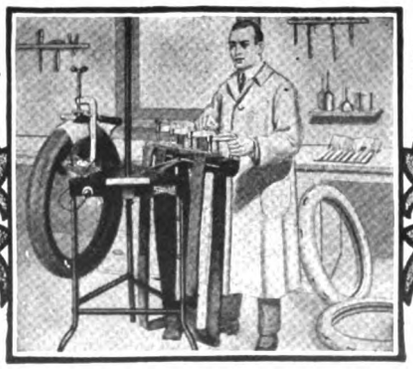
The increased price of tires has increased the demand for tire repairs. With a Shaler Plant you can get the profits on the business your customers are forced to take somewhere. By using the efficient Shaler Method you can make better repairs at less cost than your competitor who has an old style outfit. Either you can make more profit or do repairs so cheaply as to get practically all the work in your community—and outside work, too.

Write for Free Catalog

Which shows the only complete line of tire vulcanizers in the world—from a $1.75 kit for the motorist to carry in his tool-box to complete plants that will turn out two hundred tubes and a dozen casings daily.

C. A. Shaler Co., 260 Fourth St., Waupun, Wis.

$60 Electric or Steam



Subject to Trade Discount

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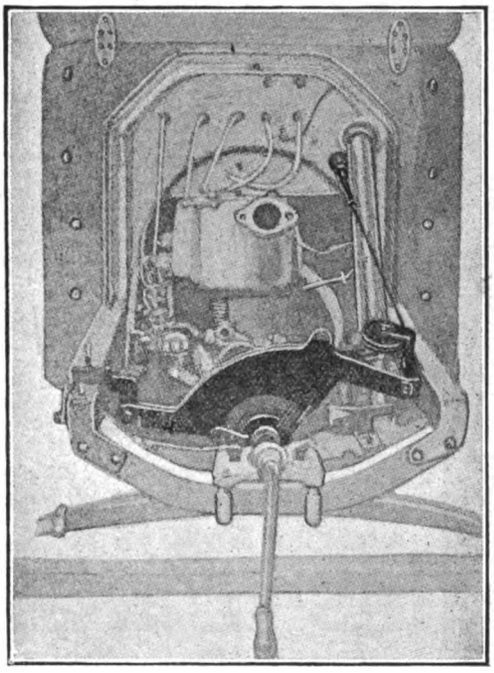
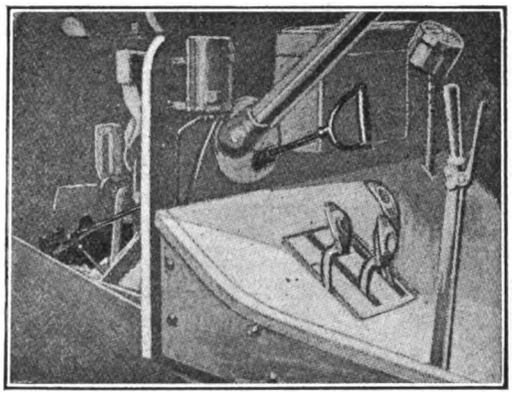


The Denver Starter For Ford Cars

Is Just the thing to put on your Ford and Metz autos.

Entirely concealed—guaranteed to turn your engine over—light, only weighs eight pounds—simple, any mechanic can put it on—positive in its action. Does not disfigure your car in any way — neither the crank or any other working part of your machine is interfered with—no ratchets—no cogs — no friction — automatically releases on back fire — no danger. This starter complete delivered, charges prepaid, anywhere in the United States, for only $7.50.



THE DENVER FORD STARTER CO.
327 Century Building, Denver, Colo.

Gentlemen:
Please find inclosed $7.50 for which please send me one of your starters for Ford or Metz Cars, charges to be prepaid by you, with full instructions for putting same on.

Name.....

Street Number.....

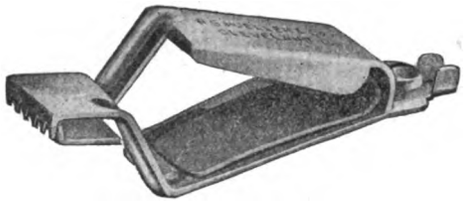
City or Town.....State.....

Durable! Efficient! Economical!
Try It! You'll Like It!

The Denver Ford Starter Co.

327 Century Bldg., Denver, Colo.

Time Savers
For Charging Storage Batteries



HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.
Made of steel—lead plated—may be used over and over again.

No. 13-A—¾" spread of jaws.
No. 16-A—1½" spread of jaws.

Your money back without quibble if not entirely satisfied.

Single Lots, Each 15c Lots of 10, Each 12 1-2c Lots of 100, Each 10c

R. S. MUELLER & CO., 431 High Ave,, S. E., Cleveland, Ohio.

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CALORITE SPARK PLUGS

The highest achievement in spark plug construction—
All standard threads carried in stock—
Master Calorite Spark Plugs are backed by this broad guarantee—
"We guarantee Master Calorite Spark Plugs against defects of material or workmanship and will replace free of charge any Calorite insulators broken by heat which are returned to us transportation prepaid".

Try Master Calorite Spark Plugs—Send for illustrated literature and trade proposition.

HARTFORD MACHINE SCREW CO.
508 Capitol Ave. Hartford, Conn.

STANDARD
FOR CHEVROLET "490"

Built on the tried and true centrifugal system which does not alter. Hand steady as a rock at all speeds.

Handsome nickel flush mounting makes it an ornament to your car.

Guaranteed country-wide service assures your lasting satisfaction.

73-18

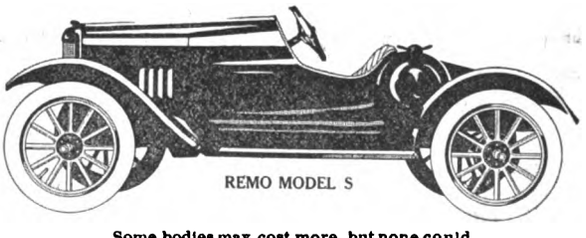
$15 *DEALERS write for proposition.*

STANDARD THERMOMETER CO.

65 Shirley Street Boston, Mass.

Remo Bodies for Ford Chassis

The REMO raceabout bodies are distinctive, highly attractive, finely made, give class and are comfortable.



REMO MODEL S

Some bodies may cost more, but none could be better. Four tried and proven models.

DEALERS: Investigate the Remo line. Prices and discounts will interest you. Fast sellers. Just what the Ford owners want and are buying.

Send Today for Latest Catalogue and Discount Sheets

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(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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MORE DYER PRODUCTS
FOR THE REPAIRMAN

EARN
$2.00
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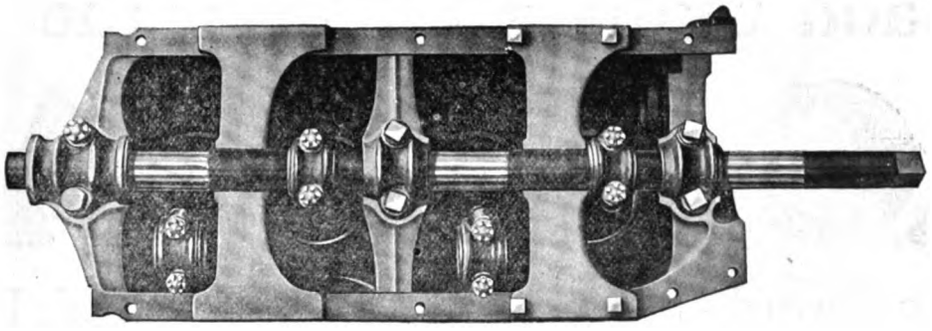
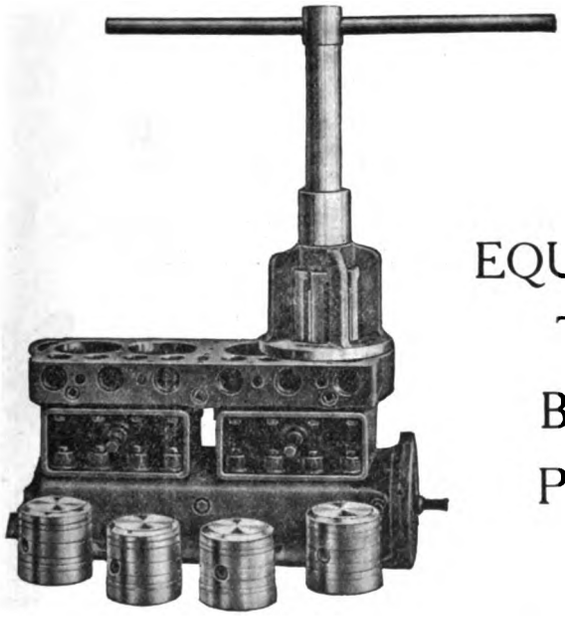


Don't Stick to Questionable Hand Labor at 75c per hour

REAMER FOR FORD CONNECTING ROD AND MAIN BEARINGS

Reams Bearings True With Face of Block. Does Not Follow Worn Bearing

This tool does away with the tedious method of scraping the bearings by hand, and with it can be done much more accurate work. Connecting rods are made to line perfectly with the cylinders. Having leads of .004 of an inch at the end of each Reamer flute eliminates the long and difficult work of adjusting a worn bearing to the right size, and avoids taking any more of the metal out of the bearing than is necessary to secure a perfect fit. It has two adjustable guides to line the main bearings perfectly true. With this Reamer a job can be done in a very few minutes, leaving a smooth glassy finish, much more satisfactory than the old method of hand scraping.



BUY
EQUIPMENT
THAT
BRINGS
PROFIT

Reamer for Ford, Metz and Buick 10 Cylinders

A tool that will widen the field of the repairman, insure big profits and add a large number of satisfied customers.

The engine is the vital part of an automobile and reboring 1-32 of an inch with this Reamer and fitting new pistons and rings makes the motor run better than when new.

A properly fitted piston is the most important repair to be given an old motor; it stops all knocking and piston play; eliminates the most of motor vibration thus prolonging the life of the car and adding to the comfort of passengers.

Ford Motor Repair Stand

This stand is made primarily for use while overhauling a Ford Motor, but if desired can be adapted to hold other makes of engine. It is manufactured with a telescoping post, and can be adjusted to any height required. Motor can be turned to any position. The two shelves are made of steel 30" long by 20" wide, welded to steel posts. Malleable iron casters are furnished with each stand, making it easy to roll the table to any position desired in the shop. The advantage of this stand and table where everything necessary can be placed on the two shelves within easy reach, over the present method of assembling engines on the bench with tools and parts scattered in different places, is apparent.

WRITE FOR GENERAL CATALOGUE AND PRICES

THE G. H. DYER CO., 155 Brookline St., Cambridge, Mass.

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RECENT PERFORMANCES OF CARS ON ROADS AND TRACK

which add to the prestige of the famous

AC Spark Plugs AC

Cadillac Record

MAY 8—15, 1916

"Demon" Baker, accompanied by W. F. Sturm, of the Indianapolis News, drives a Cadillac Eight equipped with A C Titan plugs, from Los Angeles to New York, 3,471 miles, in 7 days, 11 hours, 52 minutes.

What Baker and Sturm say:

A C plugs never missed a shot in our record run; they deserve some of the credit for our record.

Hudson Record

MAY 2—3, 1916

Ralph Mulford, driving a Hudson "Super-Six" equipped with A C-Cleo plugs, broke the world's record for 24 hours by covering 1,819 miles at the Sheepshead Bay Speedway. The previous world's record was 1,581 miles.

On April 10th, at Daytona, Fla., Mulford made a speed of 102½ miles an hour with this car.

Buick Record

APRIL 29TH, 1916

Joe Nikkrent and Earl Jackson smash California's greatest road record by driving a Buick Six equipped with A C Titan plugs from Los Angeles to San Francisco in 10 hours, 47 minutes, an average speed of over 43 miles an hour.

These Records Were All Made with Standard Cars Equipped with STANDARD A C SPARK PLUGS

These are the manufacturers who equip with

AC Spark Plugs

No Greater Recommendation Can Be Given a Spark Plug

Packard	Buick	Enger	Knox
Pierce-Arrow	Oakland	Glide	Lambert
Cadillac	Oldsmobile	Lexington-Howard	Maxwell
Marmon	Stearns-Knight	Austin	McLaughlin (Canada)
Hudson	Saxon	Brockway Truck	Mercer
Chalmers	Stutz	Case Tractors	Monroe
Hupmobile	National	Chase Truck	Pilot
Chandler	Velie	Daniels	Sayers-Scovill
Haynes	Jackson	Empire	Crane-Simplex
Chevrolet	Apperson	Federal	Singer
Dort	Davis	G. M. C.	Stephens
Cole	Detroiter	Gramm Trucks	United Truck
Dodge Brothers	Paterson	Jeffery	Wilcox Trux
Reo	Moon	Kissel Kar	Palmer-Moore
Paige	McFarlan		
Peerless	Westcott		

A C plugs have been used in making practically all World's Records. A C Plugs are selected by the best manufacturers for regular equipment. Buy the quality plug—the best—an A C.

This is the Plug

Champion Ignition Company, Flint, Mich.

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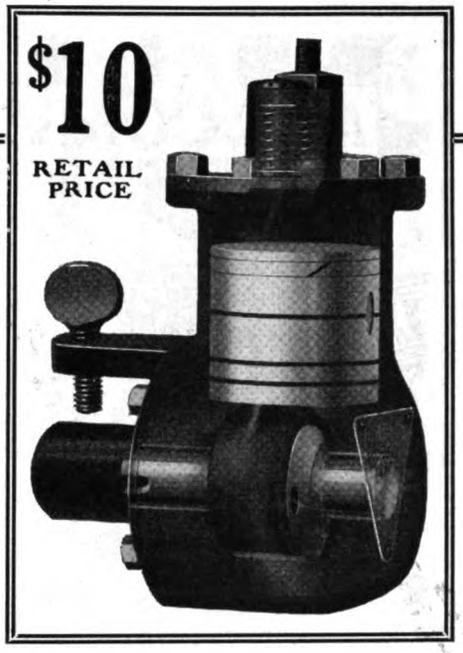

GEARLESS
DETROIT
MOTOR-DRIVEN
TIRE-PUMP
PATENTED AUG. 24, 1915
IS THE IDEAL POWER PUMP

Pump Profits Without Labor

THE DETROIT GEARLESS TIRE PUMP is the original crankshaft pump and it is the one pump that offers the dealer the maximum profits with minimum trouble.

Where the dealer installs a gear driven pump on the motor, his profit is eaten up by the labor charge.

With the DETROIT GEARLESS PUMP there is no labor charge, because the pump is sold packed in a carton just as any single article is sold from stock.

It is built like your motor, the air being drawn in as the piston retires, and forced into the tube with the upward thrust.

It is carried in the tool box with tube and gauge attached, and when needed is connected to the crank shaft in thirty seconds.

It is simple but sturdy in construction and is unbreakable. It will save its price on tire adjustments in a single season.

Note---Beware of pumps infringing basic patents granted on this pump

Ready for Reo, Chandler, Saxon Six, Dodge Brothers, Studebaker 1914-15-16, Overland 73-83 and 84, Hudson Super Six and 6-40.

MANUFACTURED BY

DETROIT ACCESSORIES CORPORATION

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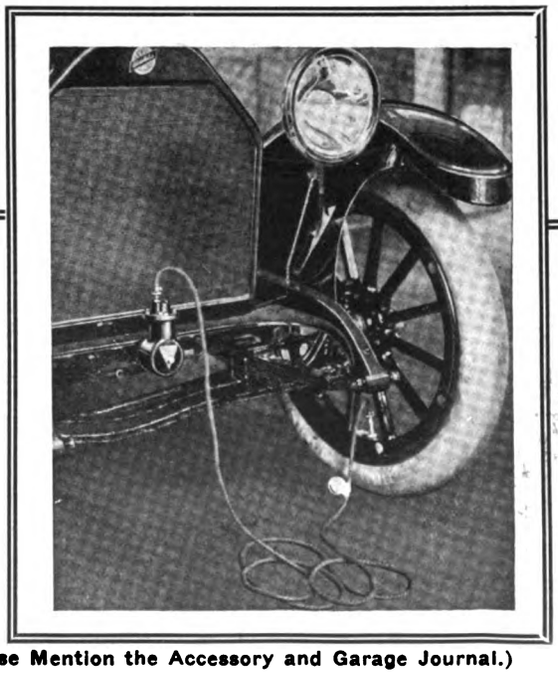

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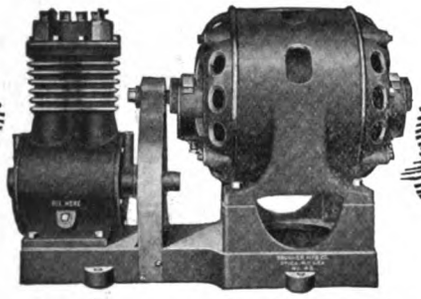
BRUNNER AIR COMPRESSORS

PORTABLE & STATIONARY



No. 66 Portable Tire Inflator.

No. 50 Portable Outfit.

MR. GARAGEMAN DO YOU KNOW

That a Brunner Air Compressor Outfit in your garage, and a Brunner Air Sign on your garage would bring you in direct contact with a new line of trade? Do you know the "Brunner Wise Motorist?" Well he is the man who drives up to the garage displaying the Brunner Air Sign, and after buying his supplies and gasoline says: "May I use your Brunner?" He is the same man who drives up to the garage without the Brunner Air Sign and says: "Is there any air in your tank?" And if replied to in the negative drives along to the first garage displaying the Brunner Air Sign, makes his purchases, and then uses the Brunner—he don't ask questions before making his purchases where the Brunner Air Sign is displayed.

Get Acquainted With the "Brunner-Wise" Motorist

His trade is valuable Mr. Garageman, and the way to get acquainted with him is to install a Brunner in your garage—you can let him know you have a Brunner by displaying a Brunner Air Sign on your garage, he knows there is always a generous supply of air at the end of a Brunner hose line, he knows that the Brunner Air Sign means prompt and efficient service for him, and he is the man whose trade you need to make your business a success.

Don't Lose Sight of the Fact That Service Counts in the Garage Business Just the Same As In Any Other Business

And if you are not in position to give the trade prompt and efficient service, you are laboring at a disadvantage, you can't blame a fellow for becoming peeved if your air supply is inadequate—avoid the possibility—install a Brunner.

Write for Our Handbook on Compressed Air and our No. 13 Catalogue Showing the Most Complete Line of Garage Air Compressor Equipment Manufactured, and Let Us Send You the Name of the Brunner Jobber Covering Your Territory.

Brunner Manufacturing Co.,

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419 FIRST NATIONAL BANK
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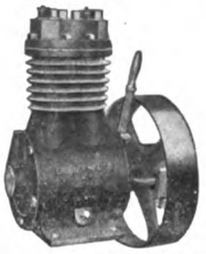
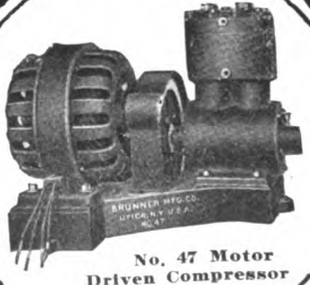


No. 102 Belt Driven Compressor.



No. 47 Motor Driven Compressor

QUALITY-SERVICE

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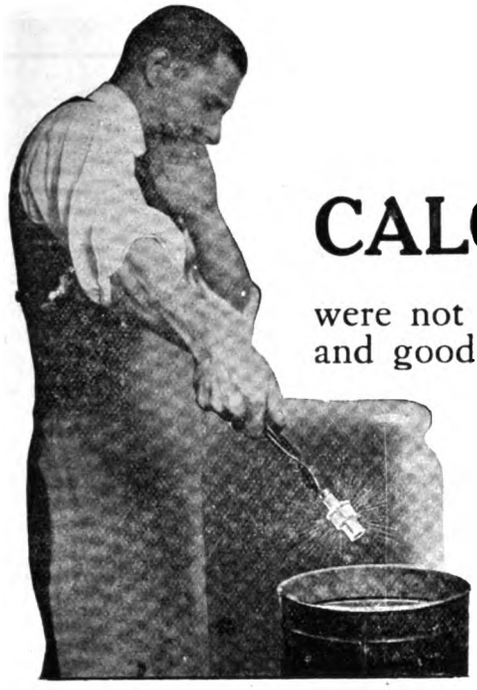
OUR TEST—YOUR GUARANTEE



MASTER

CALORITE SPARK PLUGS

were not put on the market just because big, substantial and good looking—

Far from it—

We told ourselves we must know in advance how they would perform after six months of service—a year—yes, more—

And so—

We subjected them to the most radical tests.

THE FIRST TEST

The MASTER CALORITE SPARK PLUG was heated in a gasoline blow torch to a bright red heat—1500 degrees—and instantly plunged into cold water. This heating and instant cooling was repeated twenty-six times, but the CALORITE insulator showed no sign of fracture.

THE SECOND TEST

This would be enough to satisfy the most exacting mind, yet our engineers conducted a further test. The CALORITE insulator was heated until White Hot—then plunged into cold water—a test so severe that it has never before been attempted. This instant change in temperature of 2000 degrees Fahr. had no effect on the CALORITE insulator, nor did it break when this heating and cooling was repeated 10 times.

And Master Calorite Spark Plugs came through these two tests and a severe electrical test with flying colors—They justified the confidence we had in them at the start—And we placed them on the market with the knowledge that they would give service out of all proportion to their cost—

Master Calorite Spark Plug, Regular Length, $1.00 each retail

Could we do more?

YES!!

We show our further belief, confidence and determination to stand back of every plug by protecting the purchaser as follows:

*"We guarantee Master Calorite **Spark Plugs against defects of material or workmanship and will replace free of charge, any CALORITE insulators broken by heat, which are returned to us transportation prepaid."***

SIX STYLES---Half-Inch Regular; 7-8" Regular; Metric; Model "F" for Fords and Reos; 7-8" Long; Half-Inch Long.

Retail prices **$1.00** and **$1.25,** depending upon the type.—

Master Calorite Spark Plugs

Will *not* break in service from extremes of heat or cold.
Will *not* soot.
Will *not* leak compression.
Will operate efficiently on a very weak current.

We have tested them in every variety of service and *we know.*

There is a very attractive proposition for the trade. Write for details.

MASTER CALORITE SPARK PLUGS

MADE IN THE U. S. A.

Manufactured and Guaranteed by

THE HARTFORD MACHINE SCREW COMPANY

502 CAPITOL AVENUE **HARTFORD, CONN.**

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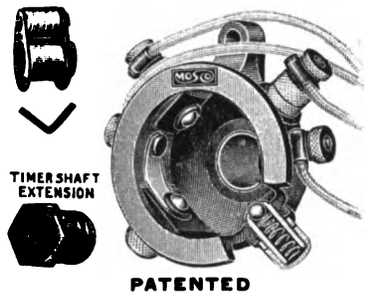
CATALOGUE NOW READY — MOSCO SPECIALTIES — FOR 1916

BEMUS Ball Contact TIMER

FORD CAR TYPE

1916 MODEL



We are now ready with a **new model** of the **Timer** which in 1915 met with such phenomenal success. The original construction is retained, but a number of **improvements** and new features have been adopted which will further advance an acknowledged supremacy. Send for new circular describing

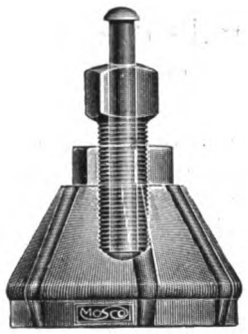
TOP WIRE CONNECTIONS, OFFSET BALLS, EXTRA LONG, NON-WEARING ROLLER, REINFORCED ARM

PRICE $2.50

WHEEL PULLERS

(Loose Plunger Type)

For Ford, Overland, Buick, Maxwell, Saxon and Chevrolet Cars.



Patented { Mar. 24, 1914 / Dec. 15, 1914

Every practical man knows that the only way to start a wheel which is "frozen" to the axle is to drive back the axle while pulling the wheel. Two men are required by the old method—the ordinary wheel-puller will never take off a stuck wheel—one man can do it easily with the MOSCO pullers. They have loose plungers extending through the screws—and bearing on the end of the axle. A blow with the hammer on the plunger, a turn of the screw, another drive with the hammer, and the wheel is off—no matter how long it has been on or how fast it is stuck. Information and prices on request.

THE MOSCO VALVE GRINDER

This tool differs radically from others in many respects, but mainly in the fact that it can safely be used by those unskilled or inexperienced in valve grinding. It is really more of a machine than a hand tool, and it renders valve grinding an ACCURATE MECHANICAL OPERATION rather than a guess-work hand job. The working principle is absolutely new. The operating handle is attached to a chain coiled on a pulley, carrying the tool chuck. The operator pulls the handle, rotating the tool and the valve; a spring on the chain pulley pulls in the opposite direction, automatically reversing the rotation of the valve. Much greater rapidity can be obtained with the MOSCO GRINDER than with the ordinary tool, resulting in a very superior finish on the seats. Made of the best materials—thoroughly guaranteed. At the price at which it is listed this grinder should be in every tool kit. In ordering state make and year of car or motor. Price **$1.50** each.

MOTOR SPECIALTIES COMPANY

MANUFACTURERS, WALTHAM, MASSACHUSETTS

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FREE!

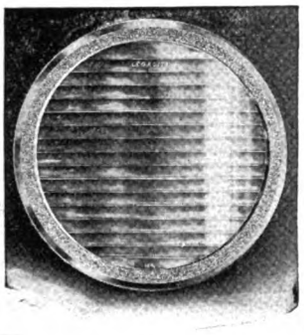
Send for This Book

Get "26% More Light—No Glare"

Legalite is a new remarkable headlight lens. It throws no glare—you can stare into it without batting an eyelid! Yet it actually gives 26% more light than the ordinary lens. It fills a long felt need of the motorist—*really* fills it.

This free book tells all about Legalite. Read how, three months after Legalite was put on the market by a Massachusetts inventor, it literally revolutionized the headlight lens industry. Read why State and City Highway Commissions everywhere have approved it; why societies like the Safety First League of America have heartily approved it; why in a remarkable test conducted by the Mass. Auto Club, it was declared to be by far the best of 26 different headlight lenses tested. Read why Kansas City, Washington, D. C., Philadelphia, Denver, Albany, as well as Police Departments everywhere heartily endorse it!

Such facts tell of themselves, how beneficial—how necessary—Legalite is. In 4 states and 29 cities, there are now stringent ordinances against blinding headlights. *Legalite complies with all these laws.* It throws a driving searching light 250 to 500 feet ahead. *But its rays keep to the ground.* They are never more than 3 1-2 feet above the ground. They don't shoot into the sky on an up-hill climb. And they cling to the ground on down-hill grades. Every depression, every irregularity in the road is shown up for what it is. Legalite, once for all, takes the danger out of night driving—makes night driving safe and *pleasant.*



The Secret

Note that Legalite Lenses are made of a combination of three distinct prisms. Legalite Lenses shoot the light *out* and *down*—not UP! That is why you get 26% More Light without the glare!

Dealers!

Write at once for Interesting Proposition.

LEGALITE

THE WONDERFUL NEW HEADLIGHT LENS

Every Monday morning you read in the paper of some tragic accident caused by the glaring headlights of an automobile. Some day your name may figure in such a story, if you use headlights that are considered so dangerous that they are prohibited by law in many places. Investigate Legalite—Some day it may save your life—or save you from maiming or killing a fellow-being.

Legalite is easy to put on—it comes in all sizes, for every style of lamp. It is very attractive in appearance, giving a handsome "cut-glass" effect to your headlights. Yet the outside is smooth glass, so that it catches no dust, and can be kept absolutely clean.

SEND FOR THIS FREE BOOK

You know how difficult and dangerous it is to drive a car in the night. A thousand times you have wished for a good headlight, that would make driving by night as safe as by day. Evidence can be shown to you to prove that Legalite provides what you have always sought. Let us send you this booklet, "Daylight Conditions for Night Driving." It tells what Legalite is—by what a curious chance it was invented—and throws an altogether new light on the problem of night driving. Send for this book now. Tear out the coupon now and fill it in before you forget. Legalite is new but is gradually spreading throughout the country. Hundreds of dealers sell it. If your dealer does not yet carry them, send us his name.

THE LEGALITE CORPORATION
Dept. 136
120 BOYLSTON STREET BOSTON, MASS.

LEGALITE CORPORATION
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120 Boylston St.
Boston, Mass.

Please send me your new free booklet, "Daylight Conditions for Night Driving."

Name.....
Address.....
Name of Dealer.....
Address.....

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O-SO-EZY

The Perfect Cedar Oil Polish

THE SATURDAY EVENING POST

Makers of a Million Cars Choose O-So-Ezy

O-SO-EZY THE PERFECT CEDAR OIL POLISH

Motor Cars Which O. K. O-So-Ezy

The makers of the following motor cars—including 1,000,000 cars in 1916—include O-So-Ezy Cedar Oil Polish as regular equipment on all their cars.

Abbott	Jeffery
Briscoe	King
Buick	Maxwell
Chalmers	Oakland
Chevrolet	Oldsmobile
Detroit-Electric	Overland
Detroiter	Paige
Empire	Reo
Grant	Saxon
H. A. Lozier	Scripps-Booth
Haynes	Stutz
Hupmobile	Willys-Knight
Interstate	Winton

NEARLY a million cars will be shipped from their several factories this year with a can of O-So-Ezy Polish in the tool kit.

All of these motor car manufacturers also buy O-So-Ezy for their own shop-work—and in wholesale quantities for their own service stations throughout the country.

All of them, in effect and in fact, say to you, and to the two million car owners of America, what they have never been willing to say of *any other* polish:

"We are glad to entrust the fine finish of our cars to O-So-Ezy Cedar Oil Polish."

Makers Know Polish Keeps Finish New

No one appreciates more keenly than the manufacturer, the necessity for the use of O-So-Ezy Polish as a finish preservative.

To hold their prestige for lasting, glossy body finish, these manufacturers have united on this unique expression of approval and standardization.

The half pint can of O-So-Ezy which they send out with each car they ship is their method of commending to owners a polish in which they themselves have confidence.

O-So-Ezy Proved by A Year's Hard Test

O-So-Ezy spent a year making good in each and every one of these fine factories.

Not a word was printed, not a claim made, until its trustworthiness was proven beyond the shadow of a doubt.

But one after another, as its advantages were presented and proven, these producers of nearly a million cars added their names to the steadily lengthening list of endorsements.

This was the polish whose advent they had awaited year after year—this was the solution of a problem of which they had always been keenly conscious.

Now O-So-Ezy Is Offered to You

And so O-So-Ezy, by long and patient performance, came into its own.

Came into its own, and is offered now to the motorists of America under auspicies more impressive than any automobile accessory has ever enjoyed.

If your car still retains the original beauty of its finish, use O-So-Ezy and keep it bright and shining.

If it already shows the effects of neglect, O-So-Ezy will do much to renew its brightness and arrest further depreciation.

THE SATURDAY EVENING POST

Once Over with O-So-Ezy —Your Work is Done

O-SO-EZY THE PERFECT CEDAR OIL POLISH

O-SO-EZY has proven to the makers of more than a million motor cars that it is a polish which makes those cars glisten and gleam like new—with a once-over application.

It has proven that it is a polish free from acids and abrasives—that the finest finish imaginable is made finer than before, after O-So-Ezy is used.

It has proven that it preserves the finish by adding life and elasticity to the paint, varnish and enamel.

It has proven that it will fill and hide surface scratches.

It has proven that it contains its own cleaning compound as well as its own polishing properties.

It Proves That Once Over Does the Job

It has proven that it will remove grime, grease and stains of every sort.

It has proven that it will leave no grease or deposit of any description to catch dust and dull the surface.

It has proven that once over—with the least exertion, the least time, the least work—does the job.

It has proven that it is sure enough and safe enough for them to commend it without question or quibble to their customers.

O-So-Ezy made good on every one of these counts, and a score of others, long before a can of it was offered to the American people.

For Piano, Furniture and Floors

O-So-Ezy is not merely an automobile polish, but a universal polish—for fine furniture, pianos and floors—a dust-proof, greaseless polish.

No polish ever enjoyed such an impressive entree into the homes of the nation—because no polish that preceded it ever *deserved* such an impressive introduction.

It cannot be ousted from any home which tests its merits in any one of a dozen capacities.

It cannot be ousted because its equal does not exist in any single use to which it can be put.

Where To Get O-So-Ezy

Hardware stores, automobile accessory stores, department stores, are stocking O-So-Ezy as rapidly as we can supply them through their jobber.

Get it from one of these—and accept no one without the name of O-So-Ezy.

Half pint, 25c; Pint, 50c; Quart, $1; Half-gallon, $1.50; Gallon, $2.50.

If your dealer has not received his supply, send a dollar to us with the coupon for a quart of O-So-Ezy—a three-months' supply.

Once Over With O-So-Ezy

Motor Cars	Leather Upholstery
Pianos	The Woodwork
Tables	Pianoforte
Chairs	Mahogany Chairs
Desks	Picture Frames
Buffets	Wardrobes
Book Cases	Doors
Mirrors	Fine Floors, etc.

Special Offer—Quart Size Only

O-SO-EZY PRODUCTS CO.
DETROIT, MICH.

DEALERS

A million O-So-Ezy customers have already been made for you. A million more are to follow. Don't delay a day. You must have O-So-Ezy in stock. Wire, phone or write your jobber right away.

We Have Taken the Lead in the Polish Field

ABOVE is a reproduction of the double page spread in the July 8th issue of the Saturday Evening Post with which we inaugurate the greatest merchandising and advertising campaign ever waged in behalf of a polish.

For months we have been preparing for this campaign. Already thousands of dealers have stocked up to cash in with us on our efforts. If you have not ordered O-So-Ezy, don't delay longer but wire your jobber or to us direct.

The endorsement of O-So-Ezy by the Makers of a Million Cars has placed this polish far out in front. From the demand already clamoring for our attention we *know* that we are leading the polish field.

Here are the cars that carry O-So-Ezy as standard equipment:

Abbott, Briscoe, Buick, Chalmers, Chevrolet, Detroit-Electric, Detroiter, Dixie, Empire, Grant, H. A. Lozier, Haynes, Hupmobile, Inter-State, Jeffery, King, Maxwell, Oakland, Oldsmobile, Overland, Paige, Reo. Saxon. Scripps-Booth, Stutz, Willys-Knight and Winton.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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O-SO-EZY

The Perfect Cedar Oil Polish

Your Opportunity to Cash In

FOR three years O-So-Ezy Cedar Oil Polish has been known to thousands of users as the best polish made for automobiles and fine furniture.

But with a multitude of polishes clamoring for the attention of the trade it took the endorsement of the motor car makers to center attention on us.

Now recognition has come with a rush. When we announced in March that, after the most severe tests, a large number of the leading automobile manufacturers had adopted O-So-Ezy as standard equipment and would pack a can in the tool box of each car shipped, the results were immediate.

Orders began to flow in; the jobbers offered us active cooperation, and a wave of O-So-Ezy enthusiasm swept over the country.

Production facilities were trebled and we have been shipping night and day with the result that when this advertisement appears about 20,000 dealers will have O-So-Ezy in stock.

Now, we are going to the public with a gigantic advertising campaign, of which this double page spread in the Saturday Evening Post is the first gun. It will be followed by pages and other mediums will be added.

If you have neglected to order O-So-Ezy, wire your order now. We prefer that you buy through your jobber, but if you wish it, we will ship you direct.

It's up to you; act now.

O-SO-EZY PRODUCTS COMPANY

264-268 Jefferson Avenue DETROIT, MICHIGAN

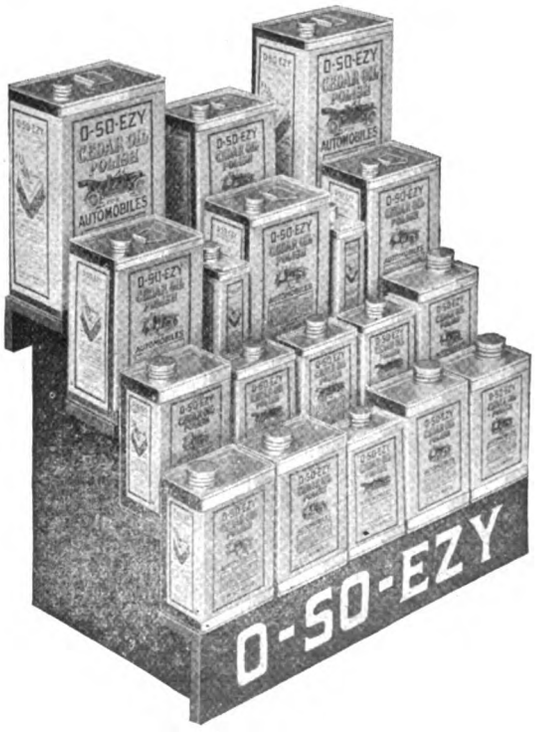
Pacific Coast Distributor, The Phil. B. Bekeart Co., San Francisco

Gold Medal—Highest Award—Panama-Pacific Exposition

O-So-Ezy comes in cans, proving that it contains no acid. The retail prices are: Half Pint, 25c; Pint, 50c; Quart, $1; Half Gallon, $1.50; Gallon, $2.50.

Here is Our Special Offer

We will ship this handsome display stand with an assortment of O-So-Ezy sizes to you, charges paid, for $12. You will sell this assortment for $20, which gives you a profit of 67% on your investment.



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METAL SPECIALTIES

FITZGERALD MFG. CO.

Whether it's price, quality or quick service, singly or collectively, we can better serve you than any other concern in the industry. There is no demand that we cannot meet, whether for a standard or special product to specification.

In standard products there is but one quality—the best: when made to specification the quality is what you desire. For years we have made the most extensive line of metal specialties of the industry, and these have been sold at prices that have brought to us the business of thousands of concerns. No delivery service can be more prompt.

Our regular stock products include Electric Driven Motor Horns, Electric Vibrator Horns, Mechanical Horns, Motorcycle Horns, Copper-Asbestos Gaskets, Auto and Motor Boat Push Buttons, Shims and Shim Stock, Washers and Stampings, Spring Battery Connectors, Gasket Sets for Ford Cars, Ford Electric Lighting Outfits, Ignition Wiring Assemblies, Hard Rubber Switches, Wire Terminals, Brass and Steel Shim Stock and Hose Bands.

If you want the warning signal business in your territory, sell CLERO HORNS. There is a size and type for every service. This is a business opportunity that will surprise and interest you.

Write for discount sheets and catalogue describing our special assortments for garages and repair and machine shops.

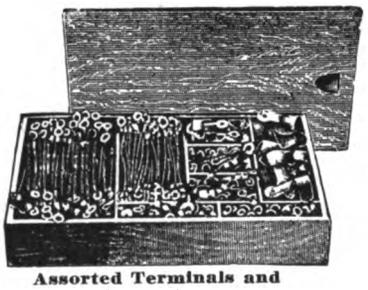
Ford Car Lighting Outfit

Electric Push Button

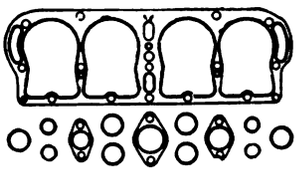
The Highest Grade, Lowest Priced Mechanical Horn Made.

Clero Horns

A Size and Model for Every Vehicle.



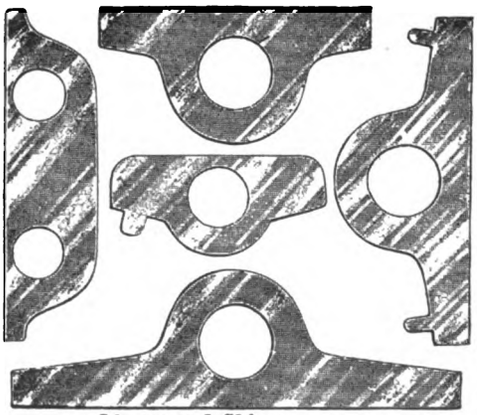
Assorted Terminals and Connectors



Ford Engine Gasket Sets

Assorted Shim Stock

Exhaust Flange Gasket



Liners and Shims

Perfection Spring Battery Connector

Copper and Brass Cable Terminals

TORRINGTON, CONN.

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Perlman Patent Protection Policy!

IN buying demountable rims from the Perlman Rim Corporation, it is well to note that on all such rim purchases there is granted protection under, and exemption from any infringement of, the PERLMAN PATENT NO. 1,052,270, which the United States District Court for the Southern District of New York, and the United States Circuit Court of Appeals (Second Circuit), have in recent decisions construed to be the basic and fundamental patent covering the various types of demountable Rims on the market. * * * This applies to all types of tire rims in demountable form, both plain clincher and all styles of Q. D. demountable (straight side or clincher), whether employing circumferentially split tire-locking rings or using a tire rim, split laterally or crosswise.

¶ The Perlman Rim Corporation guarantee that all demountable rims they sell carry protection under the Perlman patents, and are free from infringement of any other patents Should such demountable rims, and parts for same, at any time be made the subject matter of suit for alleged infringement of any patent, we will assume the defense of such litigation without cost to the purchaser. We guarantee the clear title of all our product.

ALL LICENSED DEMOUNTABLE RIMS
BEAR THIS STAMP

MANUFACTURED UNDER
PERLMAN PATENT
FEBRUARY 4, 1913

Perlman Rim Corporation

(Controlling Perlman Demountable Rim Patents)

MANUFACTURERS OF

Demountable Rims

Plain Clincher and all styles of Q. D. Demountable, Straight Side or Clincher

Executive Offices and Sales Department — NO. 1790 BROADWAY
United States Rubber Co. Building
Broadway and 58th Street
Phone 3130 Columbus
New York, N. Y.

Manufacturing Plants
Jackson, Mich.—Utica, N. Y.

ALL CORRESPONDENCE SHOULD BE SENT TO
PERLMAN RIM CORPORATION
No. 1790 Broadway, New York, N. Y.

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SHAFT-DRIVE

Genemotor

TRADE MARK

The universal car, operated in many climes and over all kinds of roads, should have a starting and lighting generator that will fully measure up to the dependability of the Ford.

The Shaft-Drive Genemotor is thoroughly reliable. Built by the General Electric Company, specialists on electric motors. It was expressly designed as a perfect working unit with the Ford motor.

"U S L" Battery Standard Equipment.
Price $85 f. o. b. Lynn, Mass.
Sold Everywhere

A. J. PICARD & COMPANY
General Distributors
1720-1722 Broadway New York City

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VOL VI. PAWTUCKET, R. I., JUNE 1916. No. 2

N. A. A. C. Standardizes Service Policy.

At Annual Meeting of National Manufacturers' Association the Obligations of Maker to Purchaser Clearly Defined---Standard Chassis Also Adopted, and Truck Shows Voted Down---Colonel Clifton Returned to the Presidency.

AT THE recent annual meeting of the National Automobile Chamber of Commerce the body adopted a service policy providing a definite basis that will insure fair treatment to every car owner, whether commercial or pleasure vehicles. It is expected that the policy will obviate the frequent misunderstandings on this subject that have existed in the past, especially in view of the fact that the provisions of the policy will be printed in poster form and displayed in sales rooms and service stations for public inspection.

The 97 companies having membership in the chamber were practically all represented at the meeting. The officers and directors elected are specified on page 30 of this magazine. One of the most important discussions concerned motor truck shows, and it was decided that exhibitions were not necessary, though the decision met with some opposition. Another important feature of the sessions was the definition of a standard chassis, for pleasure and commercial types.

Col. Charles Clifton, President, N. A. C. C.

The service policy, which was adopted unanimously by the body, follows:

The Blank Motor Car Company, through its dealers, aims to give all purchasers of Blank cars uniformly fair, courteous and businesslike treatment, and to assist them in every reasonable way to keep their cars in good running condition.

The principles of this policy are:

First—To fulfill the obligations assumed under the manufacturer's warranty.

Second—To furnish repair parts as promptly as possible at our current prices.

Third—To maintain facilities for making repairs, adjustments and do general overhauling in a prompt and competent manner at reasonable charges.

Fourth—To make inspections and adjustments, not necessitated by neglect or abuse, free of charge for one month following delivery of a new car to purchaser, and thereafter at our regular prices.

Fifth—To furnish printed instructions in the operation and care of our cars.

Sixth—Service to be rendered does not include furnishing repair parts or labor without charge, except as provided in the warranty and in the following specific clauses of this service policy:

Replacement of Defective Parts.

(a) Within ninety (90) days after delivery of a new car to purchaser the Blank Company will furnish, free of charge at the factory, duplicate parts to replace any parts as covered by our warranty that are returned to the factory with shipping charges prepaid and which are determined by the company to have been defective in material or workmanship, or it will put such parts in condition as good as new without charge.

(b) Within ninety (90) days after delivery of a new car to the purchaser the dealer will install, free of labor charges, any parts that the factory furnishes or repairs free of cost to replace any parts determined by the factory to be defective, the purchaser to assume cost of replacement parts and installation of same pending factory decision.

(c) The party returning the parts will be notified promptly of the decision of the factory regarding allowance of a claim for replacement or repair of parts returned.

Inspection and Adjustment.

(d) Cars brought to service stations maintained by factory, branch or dealer, will be inspected and all necessary adjustments will be made as in paragraphs (e) and (f), without charge during the first month after delivery of a new car to purchaser, provided the car has not been

Wilfred C. Leland. Vice President, N. A. C. C.

Hugh Chalmers, Second Vice President, N. A. C. C.

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tampered with or injured by accident or neglect. After the first month adjustments will be made at the regular charges of the service station.

(e) Inspection includes examination and report of the condition of the car.

(f) Adjustment includes only such adjustments as inspection has found necessary to put the car in good operating condition.

(g) Every dealer is expected to give the same inspection and adjustment service on the cars made by this company without regard to the territory in which they were bought.

Repairs, Replacements, Etc.

(h) All work not included in inspection and necessary adjustment during the first month, or installation of replacements under the warranty, will be charged for at regular rates.

(i) When any charge work is to be done and the cost can be estimated in advance, the owner, upon request, will be advised of the amount of the charges before the work is begun.

(j) When it is necessary, for the convenience of the owner, to render service at a distance from the service station, the time spent by employees going to and from the job will be charged for at the regular rates of the station, together with all proper expenses of making the

H. H. Rice, Second Vice President, N. A. C. C.

trip, cost of shipping parts, if any, and other necessary incidental expense.

Overtime Work.

(k) Any overtime, holiday or Sunday work done upon the request of the owner will be charged for at the regular overtime rate.

Instructions in Care and Operation.

(1) Instructions in printed form regarding the care and operation of the car and its accessories, and proper method of ordering and returning parts, will be given to the purchaser upon the delivery of the car.

(m) Personal instruction will be given in accordance with the agreement between dealer and customer at the time of purchase.

General.

(n) For service and replacements on engine starters, batteries, magnetos, generators, lamps, carburetors, tires, rims or other trade accessories that are not made by the manufacturer of the car, application may be made direct to the nearest service station maintained by the maker of such accessory. Dealers will be provided with a list giving names and addresses of the manufacturers of said accessories.

(o) No promise of service, free repair work, inspection or adjustment, except as

Windsor T. White, Second Vice President, N. A. C. C.

herein specified, given or made by the dealer, shall be binding on the manufacturer of the car.

(p) To help the dealer carry out the intent of this service policy, the owner is requested to furnish all information necessary to the prompt and proper filling of orders and issuing of credits and to observe the requirements regarding return of parts with claims for replacement.

(Signed)

THE BLANK MOTOR CAR COMPANY.

Address.....

The provisions of the standard parts of policy, which applies to all dealers throughout the country who represent members of the chamber, is as follows:

N. A. C. C. Standard Repair Parts Policy.

The purpose of this policy is to place the relations between the Blank Motor Car Company and its dealers on a definite, fair, uniform and businesslike basis.

(1) Stock of Parts—The dealer will be required to maintain a minimum stock of both "current" and "service" parts as specified by manufacturers, to be paid for by the dealer on or before the 20th day of month following delivery.

(2) Censoring of Orders—To prevent the overstocking of inactive parts by the dealer or the purchasing of an excessive stock of any parts, the right is reserved by the manufacturer to reduce in quantity the number of pieces of any part or parts ordered by the dealer.

(3) Inventories—The dealer will be required to furnish an inventory of current and service parts upon request. The manufacturer reserves the right to send an auditor to verify inventories and reduce or increase stock as he sees fit in accordance with clause No. 1.

Col. George Pope, Treasurer, N. A. C. C.

(4) Shipments to Dealers' Territory—So far as possible the dealer will be required to see that all orders for parts from his territory are placed through him.

(5) Discounts—Discounts to garages or repair shops will be at the discretion of the manufacturer.

(6) Designation of Parts Stocks—Stocks of parts shall be designated as follows:

(a) Current Parts—All parts used in cars of models being produced by the factory.

(b) Service Parts—All parts for models no longer being produced by the factory and which have not been superseded by other parts that are interchangeable with them.

(c) Obsolete Parts—Parts that have been superseded by other parts that are interchangeable with them.

(7) Return of Parts—

(a) Defective parts claimed defective under the 90-day warranty must be returned to the factory, with shipping charges prepaid, within 30 days

R. D. Chapin, Secretary, N. A. C. C.

from time defect claimed manifests itself.

(b) Obsolete parts shall be returned only as ordered by manufacturer.

(c) Surplus parts may be returned only by individual arrangement with the manufacturer.

All parts shipped to the manufacturer by dealer shall have transportation charges prepaid and be properly tagged.

(8) Notification of Owner—The manufacturer reserves the right to communicate direct with owners concerning replacement and disposition of parts returned.

(9) Disposition of Returned Parts—The manufacturer reserves the right to dispose, within 30 days, of parts returned, without assuming liability unless covered by shipping instructions or adjustment is accepted.

(10) Parts Purchased or Made Outside of Territory—The manufacturer will refuse to consider claims for or accept for adjustment any parts not supplied by him.

(Signed)

THE BLANK MOTOR CAR COMPANY.

Address.....

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IMPORTANT CHANGES PROPOSED FOR S. A. E.

A PROPOSAL to widen the scope of the field covered by the S. A. E. was given serious consideration and proved to be the most important feature at the annual outing of that organization held on the Great Lakes during the week of June 12. Should the field of the society be extended to include engineers in the other industries where the gas engine plays the most important part, it was suggested that the old initials by which the organization is so widely known, could be retained.

Henry Souther, a consulting engineer in the government aeronautical service, suggested that if the question of changing the name of the society was the only obstacle in the way of uniting the various societies with one common interest, it could be readily overcome and that the word "Automotive" could be used in place of "Automobile," leaving the initials of the organization S. A. E., as at present, and yet having the full title comprehensive and symbolical of what the organization stood for.

According to President Russell Huff, who also spoke on the question of enlarging the activities of the organization, a merger such as proposed would increase the membership of the society from 2000 to 5000 members.

A resolution was adopted fixing the manner of selecting the nominating committee, providing that it shall be constituted by the appointment of a member representing each section and three other members, no two of whom may be residents of the same section.

The following were elected: K. W. Zimmerscheid, Detroit section; A. C. Bergman, Metropolitan section; C. S. Pelton, Cleveland section; F. E. Place, Mid-West section; E. S. Foljambe, Pennsylvania section; D. P. Dorris and David Ferguson.

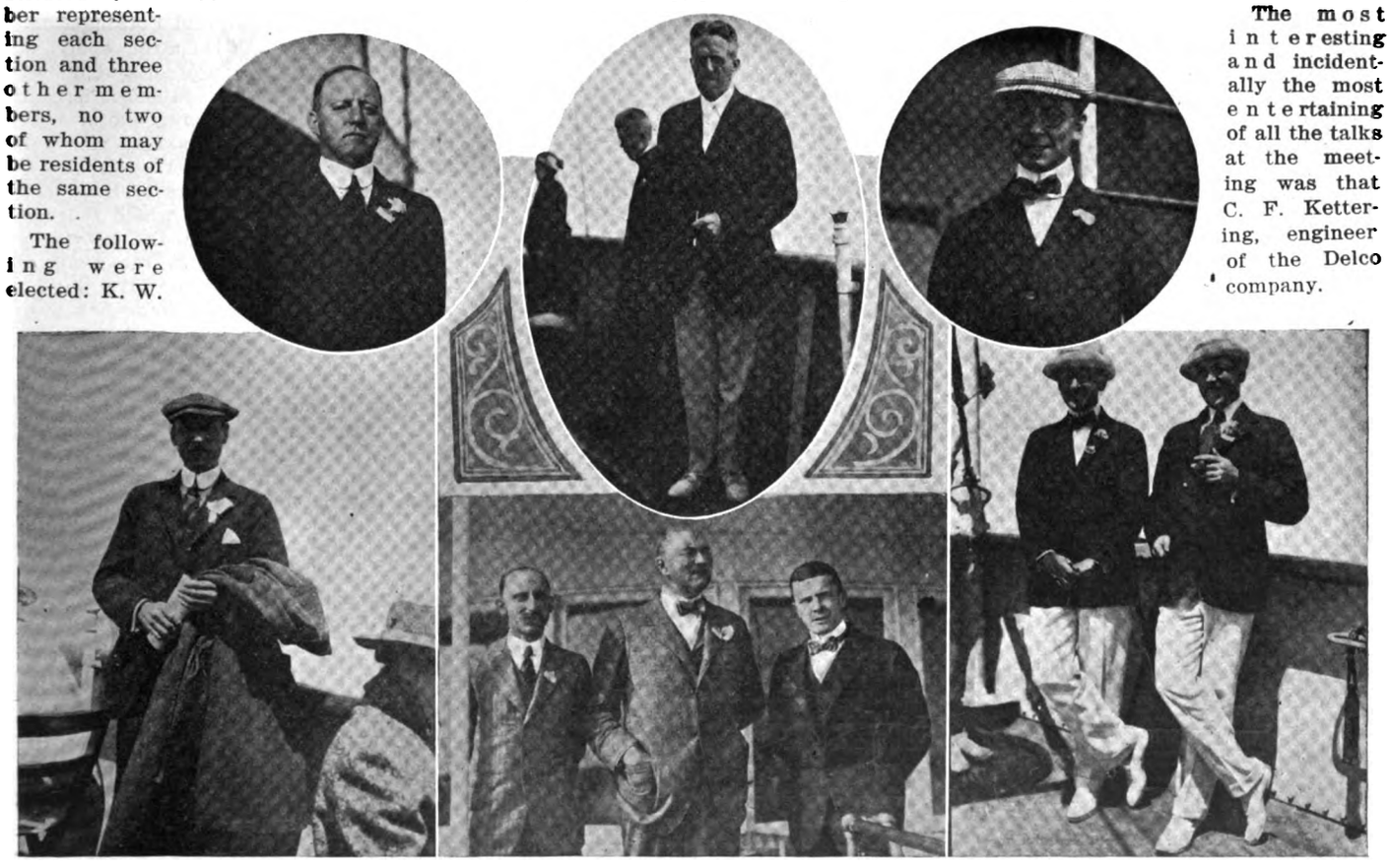
For officers for the next year the committee made the following nominations: George W. Dunham, consulting engineer, for president; J. G. Vincent, Packard Motor Car Company, vice president; B. B. Bachman, Auto Car Company, F. E. Moskovics, Nordyke & Marmon Company, as councilors. Herbert Chase remains as treasurer of the society.

A feature of the business meeting was the presentation of a life membership in the society to K. W. Zimmerschied in recognition of the valuable service he had rendered the society in securing the adoption of its standards.

A motion was also made to alter the constitution in regard to initiation and annual dues, making a special classification for a new grade of membership to be known as united service engineer. While this leaves the qualification for membership unchanged, it makes the initiation for this classification $10 and the annual dues $5, without voting privileges. This action was proposed to permit the engineers in the government service to become members.

The papers presented, with their authors, are as follows: "Car Performance," D. L. Gallup, professor of gas engineering, Worcester Polytechnic Institute; "Kerosene Versus Gasoline," by Prof. Charles E. Lucke, professor of mechanical engineering, Columbia university; "Recent Aeroplane Engine Development," by Neil MacCoull, Westinghouse Machine Company; "Differential Substitutes," D. D. Ormsby, chief engineer, Brown-Lipe-Chapin Company; "Automobile Experiences in the Great War," W. F. Bradley; "The Farm Tractor," C. M. Eason, sales manager, tractor bearings department, Hyatt Roller Bearing Company; "Dynamics of Vehicle Suspension," Dr. Benjamin Liebowitz, research scientist, New York City; "Pneumatic Tire and Rim Situation," J. E. Hale, experimental engineer, Goodyear Tire and Rubber Company; "High Speed Engines," A. P. Brush, consulting engineer, Detroit, Mich.; "Possibilities of the Constant Pressure Cycle," Arthur B. Browne and Herbert Chase, consulting engineer at Branford, Conn., chief engineer, the Automobile Club of America respectively; "Refinements in Truck Design," H. D. Church, chief engineer, truck division Packard Motor Car Company; "Mechanical Transport Mobilization," Arthur J. Slade, consulting engineer, New York City; "Large Single Versus Dual Solid Tires for Trucks," W. H. Allen, manager truck tire department, B. F. Goodrich Company; "Factors of Safety," Russell Huff, Dodge Brothers Motor Company."

The most interesting and incidentally the most entertaining of all the talks at the meeting was that C. F. Kettering, engineer of the Delco company.



Some of the Leading Figures of the S. A. E. Mid-Summer Meeting: Upper Left, Arthur J. Slade, New York City, Consulting Engineer; Upper Centre, George W. Dunham, Consulting Engineer, Probable Nominee for Next President of the Association; Upper Right, Russell Huff, President of the Association; Lower Left, H. E. Coffin; Lower Centre, Left to Right, Lieut. R. T. Yong, Henry Souther and Dr. H. C. Dickinson; Lower Right, R. M. Owens and R. R. Owens of the R. M. Owens & Co.

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Lack of Cash Prevents Merger

Plan to Combine Overland, Chalmers, Hudson, Auto-Lite and Fisk Companies Abandoned.

John N. Willys, president of the Willys-Overland Company, has announced officially that the plan to merge the Overland, Chalmers, Hudson, Fisk and Auto-Lite companies into a huge holding company, with an approximate capitalization of $250,000,000, has been abandoned. Mr. Willys is reported as having made the following statement:

"As the proposition was first put to me I understood that I was to receive payment on a cash basis for the holdings which I would turn over. There would have been no objection to such procedure. When I discovered that the cash was not forthcoming and that it was the intention to carry through the proposition on a different basis, I decided to withdraw."

As regards the rumors that the plan might have fallen afoul of the Sherman anti-trust act, Mr. Willys asserted that it had nothing to do with the abandonment.

BIG AUTO MERGER.

It has been reported in New York financial circles that the Saxon, the Paige, the Grant, the Stearns, the White and the Peerless companies are all included in the merger of 15 large automobile manufacturing concerns into a corporation to be known as the National United Motors Corporation with a capital of $75,000,000.

No information as to the officers of the new corporation has been given out, except that a New York banker will be president and that the details of the merger were worked out by P. F. Vortkamp of Detroit, assisted by Charles C. Neal. It is also reported that the negotiations for the merger have been completed and that some of the largest bankers in the western cities will underwrite the proposition.

MILLER INCREASES CAPITAL.

The capital stock of the Miller Rubber Company, Akron, O., has been increased from $2,000,000 to $20,000,000. Part of the new issue will be issued as a dividend of 66 per cent. to stockholders. The new stock will be both common and preferred and will secure funds for the enlargement of the factory.

HEADS STEWART-WARNER CO.

At a recent meeting of the directors of the Stewart-Warner Speedometer Corporation, C. B. Smith was elected president of the company to succeed the late J. K. Stewart, who died on June 1. W. J. Zucker was elected vice president and secretary and T. T. Sullivan, vice president and treasurer.

Mr. Zucker was elected to fill the vacancy on the directorate created by Mr. Stewart's death and L. H. La Chance has been elected chairman of the board.

PACKARD DECLARES BIG DIVIDEND.

The Packard Motor Car Company recently declared a stock dividend of 50 per cent. on the common stock, payable Aug. 1 to holders of record June 16. The amount of common stock now outstanding is $7,771,830. At the same meeting of the directors Henry B. Joy was formally elected chairman of the board and Alvan Macauley president of the company.

METZ PLANT BUSY.

The big plant of the Metz Motor Car Company, Waltham, Mass., is being worked to its maximum capacity to meet the large demand for the gearless Metz. At the end of May, which was the largest in the history of the company, train loads of Metz cars were shipped to all parts of the country. The company's plant at Waltham, which is the largest east of Detroit, is one of the most complete in the world for the manufacture of automobiles, practically everything that goes to make up the Metz being manufactured in the four big factories, except the Gray & Davis starting and lighting systems, with which they are equipped, and the Goodrich tires. The company even owns its own timber lands in Vermont, where the lumber used in the bodies is cut.

DU PONT BUYS FAIRFIELD CO.

The Du Pont Fabrikoid Company, Wilmington, Del., has purchased the Fairfield Rubber Company, whose plants are at Fairfield, Conn. The Fairfield company manufactures a coated textile similar to Fabrikoid and it is used extensively by automobile and carriage manufacturers. All the present employees will be retained, the change effecting only the owners. The company will continue under its old name. J. K. Rodges, sales manager of the Du Pont Fabrikoid Company, will act in the same capacity for the Fairfield company.

BATES GOES TO KING.

G. J. Bates, formerly with the Firestone Rubber Company, has joined the King Motor Car Company in the capacity of commercial manager, a new executive position, the inauguration of which was announced at the recent banquet tendered to district sales managers by the company at Detroit. Mr. Bates will have supervision of the sales and advertising departments. He was with the Firestone company for three years, handling accounts in Michigan, and with the Diamond Rubber Company for seven years as a department manager.

Stutz Motor Changes Hands.

Control of Company Has Been Secured by Large Banking Interests—Stutz Remains at Head.

Allan A. Ryan of New York and several prominent bankers have secured control of the Stutz Motor Car Company of Indiana and all of the assets and capital stock of the company have become the property of the Stutz Motor Car Company of America, which has been organized to take over the old plant.

H. C. Stutz will be president of the new company and Allan A. Ryan will be vice president. The directors, including Mr. Stutz and Mr. Ryan, are G. H. Saylor of the Chase National Bank; S. A. R. Fletcher, president of the Fletcher American National Bank of Indianapolis; H. F. Campbell and R. E. Maypole. Mr. Campbell, who is chairman of the board, will remain as secretary and treasurer.

The new Stutz company will have an issue of $75,000 shares of stock, no par value, of which 37,500 shares have been syndicated and will be offered for subscription at $55 a share. It is also planned to make additions to the plant at Indianapolis which will increase the output from 50 to 100 per cent.

HARVEY ISSUES SPRING BOOK.

The Harvey Spring and Forging Company, Racine Jct., Wis., after spending several years and a large sum of money in research, has completed and is issuing a reference book concerning motor vehicle springs, which every garage man will find of great value in his every day work. The distinguishing feature of this book is the list of springs for which there is liable to be any demand, the list being arranged alphabetically by the name of the car model, not only for 1916, but for every year in which the make has been manufactured. It shows the location of the spring, width, number of leaves, length without load, length of ends, opening without load, size of eyes, thickness at centre, weight and the Harvey price, stock number and type. It not only lists makes now on the market, but those that have become obsolete. Several pages are devoted to the repair of springs and also to specific directions on how to order springs. The book is being distributed free of charge by the Harvey Spring and Forging Company.

SAXON EXCEEDS EXPECTATIONS.

In the 11 months ended in May the Saxon Motor Car Company earned $1,250,000 net, which is equivalent to 20.8 per cent. on $6,000,000 stock outstanding. June is expected to be a record month, in which event the estimate previously announced by President Harry W. Ford of $1,250,000 for the year will be exceeded.

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Durant President of General Motors

After Long Fight He Is Elected President to Succeed Nash—Director Strauss Quits.

After a fight lasting six years, William C. Durant has regained control of the General Motors Company, he being elected president to succeed Charles W. Nash, resigning. There was a lack of harmony among the directors, as is shown by the resignation of Albert Strauss upon the election of Mr. Durant. W. C. Leyland, vice president and general manager of the Cadillac Motor Company, one of the General Motors group, was chosen to succeed Mr. Strauss.

How Durant Lost Control.

The election is the outcome of a fight that has been waged steadily since 1910, when the general slump in the automobile manufacturing business caught the General Motors Company in a weak financial position. During that year it was necessary to borrow $16,000,000, and this was done under a voting trust agreement, which forced Durant out of control. J. N. Wallace, Frederick Strauss, James J. Starrow, Emory W. Clark and William C. Durant formed the voting trust, which was dated Oct. 1, 1910, and was to run for five years, or until the $16,000,000 six per cent. notes, due Oct. 1, 1915, were paid in full. Under the terms of the agreement a majority of the company's outstanding preferred and common stock was deposited.

In the fight that Mr. Durant waged since that time it is generally understood that he had the financial backing of Pierre du Pont and banking interests of New York City. The first concrete evidence that the tide of battle was going to Durant and his backers came with the formation of the Chevrolet Motor Car Company and the quick increase of its capitalization from $20,000,000 to $80,000,000. Further support of the evidence was supplied by the shareholders also authorizing the directors to issue new stock at their discretion, giving them authority to exchange new stock for stock of the General Motors Company in the ratio of not more than five shares of Chevrolet for one of General Motors.

In this deal Durant had the opposition of eight directors, but won out. While the fight was going on the stock of General Motors advanced rapidly, selling at one time as high as $500 a share.

Extra Dividend Expected.

There is talk in financial circles of the possibility of the General Motors Company's directors declaring an extra cash dividend on the $16,606,000 common stock at the close of the fiscal year July 31. This expectation is based upon the extraordinary earnings of the company and the understanding allowed to exist when the regular $20 rate was inaugurated last January that stockholders might reasonably expect an extra distribution at the end of the year.

During the current fiscal period General Motors common stockholders will have received dividends of $70 per share, of which $50 was the Oct. 15 cash dividend and $20 has been in regular distribution. This $70 disbursement involves payment of $11,550,000.

Extraordinary profits are being reported for this year, it being understood that net earnings for 10 months to April 30 came within a few thousands of $20,000,000. On that basis net earnings for the full 12 months for preferred and common would run between $25,000,000 and $26,000,000. After taking out the $1,048,000 required to meet the seven per cent. preferred dividend, there would be a balance of between $24,000,000 and $25,000,000 for the common, which would be equivalent to about 150 per cent. Expressed in another way, it would mean that after paying out $11,550,000 in dividends, at the rate of $70 per share, there would be left a balance of $13,500,000.

On last July 31 General Motors had a net working capital of $31,403,000. This amount is likely to be about $45,000,000 at the close of the 1916 fiscal year, which is a larger sum than a company like General Motors normally would require. If a cash dividend of $25 to $30 a share in the form of an extra were declared the working capital would be reduced to only about $40,000,000.

Huge Gross Business Done.

It has been reported that the company did about $100,000,000 worth of gross business during the first eight months of the fiscal period, and that if the ratio is maintained the gross for the entire year would be well over $160,000,000, which would be an increase of $65,000,000, or nearly 70 per cent. over last year.

In the ratio of gross to capital the General Motors Company is unique among industrial companies. Its capitalization of about $31,000,000 is supporting a turnover more than five times as much. In view of the present condition of the automobile business it is estimated that this company, providing the conditions remain as good, will in 1917 do $200,000,000 worth of business on a capitalization of only $14,985,200 preferred and $6,506,000 common.

CHANDLER ADVANCES RATE.

Consistent with expectations expressed when the price of its stock advanced 15 points within a month, is the announcement that the directors of the Chandler Motor Company have declared an extra dividend of one-half of one per cent. and increased the rate so that it is now a full eight per cent. per annum.

The Chandler company is in a strong financial position and results thus far indicate a year of substantial profits. Production this year will total about 15,000 cars as compared with 5000 of last year. The company has outstanding $7,000,000 capital stock. Earnings are expected to run between $25 and $30 a share.

Motors Products New Combination.

Five Makers of Parts and Accessory Form a Holding Company with $10,000,000 Capital.

In the granting of a charter at Albany, N. Y., to the Motor Products Corporation, with an authorized capitalization of $10,000,000, is revealed another combination of interests of prominent makers of automobile accessories and parts. The companies embraced in the merger are the Rands Manufacturing, the Vanguard Manufacturing, the Universal Metal, all of Detroit, the Superior Manufacturing of Ann Arbor and the Diamond Manufacturing Company of Detroit and Walkerville, Canada.

The new corporation has an authorized capitalization of 100,000 shares of no par value, of which 70,000 are being offered for public subscription. The stock is divided into two classes, A and B, the second named having full voting power, while the other class has not, unless the company fails to earn $5 per share per annum for two consecutive years, in which case both classes have full voting power. At the outset the subscription price was $74 a share, the brokers reporting that the issue was oversubscribed 100 per cent.

The officials will be W. C. Rands (president of the Rands company), president; D. B. Lee (vice president of the Diamond companies), treasurer and general manager; C. F. Jensen (president of the Vanguard company), vice president and overseer of purchases; H. H. Seeley (president of the Superior company), vice president and sales manager; H. Louis Brown (treasurer of the Universal company), secretary and manager of the tube mill. The directorate includes the officers and R. R. Seeley, who will be production manager also.

While all the companies are well recognized as windshield manufacturers, President Rands states that eventually only about 30 per cent. of the total business of the corporation will be in that particular field. Plans for the future include the installation of a drop forge plant and a large screw machine department. The present output of the five companies includes, besides windshields, such motor parts as steering wheels, winter and collapsible tops, radiators and radiator tubing, hubs and hub caps, manifolds, lighting systems and metal shapes of all kinds.

NEW PACKARD INFORMATION BOOK.

One of the best books of information concerning a motor car, its operation and proper care, that has ever appeared, is that which the Packard Motor Car Company, Detroit, has issued concerning the Packard Twin-Six, model 1-25 and 1-35. Every detail in connection with the cars is given careful and ample consideration and each is liberally indexed for ready reference. Aside from the

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large variety of information contained in the book, the motorist will find the photographic and plan illustrations exceedingly valuable and complete. The lubrication chart is arranged to afford the utmost convenience to the operator, it being printed in different colors to indicate those parts that require attention at different mileages. As an example, those components needing lubrication every 300 miles are so indicated by their names being printed in red ink. The text and illustrations are printed in two colors, red and black, which makes the book, together with its tasty gray board covers, a handsome volume.

FABRIKOID ON MANY CARS.

That 75 per cent. of the motor cars to be sold during 1916 will be priced at $1000 and less, and that 60 per cent. of these will be upholstered in Fabrikoid is the statement made by the Du Pont Fabrikoid Company, Wilmington, Del., the maker of Motor Quality Fabrikoid. This would seem to indicate that the industry is turning more to this material every year, in preference to the cheap split leathers formerly used. Fabrikoid has been used for several years and has had a very severe test on thousands of cars.

NEW BROOKES' HAND BOOK.

The 1916 edition of Brookes' automobile hand book, a volume that has been recognized as an authority for several years, has just been issued. This edition, the sixth, contains an unusually wide range of information on all subjects pertaining to motor vehicles, and presents the latest available data on all systems now in use and consequently is very valuable to car owners, operators and repair men alike. About 400 of the 715 pages are devoted to 1916 equipment. In all there are 335 illustrations and 12 tables. Each subject is treated comprehensively and authoritatively, and all information is arranged so as to be instantly available to the reader. The book is put out in pocket size and bound in flexible leather. It is published by Frederick J. Drake & Co., 1006 Michigan avenue, Chicago, and is priced at $2, postpaid.

DEALER CO-OPERATION.

The time when makers could take a dictatorial attitude toward dealers is passing. More liberal co-operation is now required of the manufacturers, according to B. W. Twyman, general manager of the Inter-State Motor Company. In the matter of advertising the company has found that it does not pay to make "50-50 contracts" with dealers who often feel that they cannot carry their end of the proposition for a large amount of advertising. The company goes ahead with its own advertising over a dealer's name and then when the results come in the dealer is generally encouraged to spend more money than he would have promised to spend under the usual 50-50 contract.

Willys Head of Huge Motor Merger.

New $250,000,000 Motor Combination Will Be Second Largest Corporation in the Country.

The newest and largest combination of automobile and motor accessory companies about which financial and industrial men have been hearing more or less vague rumors for several weeks, has culminated in the announcement that five, and possibly more, of the leading manufacturers of motor vehicles and equipment are being brought together as the nucleus of a new industrial giant which would take rank as the second largest consolidation of industrial interests in the United States.

As the project stands today the capitalization of the new holding company may reach about $250,000,000, of which amount $73,000,000 will be in preferred stock, and a total issue of common stock of about 2,500,000 shares with no par value.

The general understanding is, and this understanding has been partly confirmed by John N. Willys, one of the interested and dominating parties, that today the merger embraces the Willys-Overland Company, which next to the Ford company turns out the largest number of motor cars in this country; the Hudson Motor Car Company, another large producer; the Chalmers Motor Company, one of the leading concerns in Detroit, and the Auto-Lite Company, maker of ignition, starting and lighting equipment in huge quantities. The fifth company mentioned is the new United Motors Corporation, which was recently formed to take over control of five leading accessory and parts makers, it being reported that the new holding company will take substantial interest in the corporation. Rumors are afloat that possibly the Fisk Rubber Company and the Peerless Truck and Motor Company will be added to the list.

President Willys' Statement.

As regards confirmation of the report, Mr. Willys had the following to say: "A great many reports have been circulated of the contemplated merger of the Willys-Overland, Hudson, Chalmers, Auto-Lite and other companies. Negotiations are pending which, without doubt, will result in the formation of a holding company, the name of which has not yet been decided upon, controlling the companies.

"The management of the new corporation will be controlled by the motor car interests and not by affiliated banking interests. The Willys-Overland, as well as the Hudson and Chalmers companies, will operate under the same managements and in exactly in the same manner as at the present time. John N. Willys will be president of the new holding company. The capital will be approximately $200,000,000."

W. C. Durant, the financial wizard, who has been before the public recently in several huge deals, does not figure directly in the new merger, but he is the controlling interest in United Motors, as well as president of General Motors and the Chevrolet company. It was he who worked with L. G. Kaufman, president of the Chatham and Phenix National Bank, in organizing Chevrolet, Perlman Rim and United Motors.

Mr. Kaufman is to be chairman of the finance committee of the new consolidation, the name of which has not been made public, but is understood will be the American Motors Corporation. Mr. Kaufman issued a statement in which he said the motor industry, the third largest in the country, should be stabilized.

Organizing the Industry.

"The motor car business has grown so rapidly," said Mr. Kaufman, "that it has not had time to get on a settled basis. It is now realized that the automobile is much more than a pleasure vehicle; it has become the agency of a great transportation business. We propose to arrange for its growth in an orderly way."

While details of the financing of the new company have not been announced publicly, it is said that John N. Willys, who had control of the Overland company, received $90,000,000 for his holdings, $45,000,000 being in cash and the balance in stock in the new holding company. Surprise at the valuation was the rate of $500 a share for the stock, the astonishing price being attributed to the fact that it carried control of the company. Surprise at the valuation was considerably lessened when it was learned that last fall a banking syndicate offered $400 a share for Mr. Willys' holdings.

Earnings of Four Companies.

It is freely predicted that the net earnings of the new company this year will be at least $30,000,000, two-thirds of which will be the portion of the Willys-Overland company, which is scheduled to turn out about 200,000 cars. The Chalmers company is earning about $4,000,000 annually, Hudson $3,000,000, and the Auto-Lite about $3,000,000. The company's share of the United Motors Corporation are, of course, wholly problematical, in view of the fact that the size of its holdings in that company are at present unknown.

An outstanding feature of the reports to date is the fact that the entire amount of the $73,000,000 seven per cent. preferred stock will be taken by the "vendors" as a New York banker described it. No offering of this stock will be made to the public.

MORE PACKARD MOTOR STOCK.

The stockholders of the Packard Motor Car Company, Detroit, have authorized an increase in the common stock from $8,000,000 to $13,000,000, bringing the company's total capital stock up to $21,000,000, of which $8,000,000 is seven per cent. cumulative preferred.

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WHAT MANUFACTURERS ARE DOING.

The General Tenor of Reports This Month Shows that the Volume of Business Is Steadily Increasing.

The J. & D. Tire and Rubber Company, Charlotte, N. C., has been organized with capital of $500,000 for the purpose of manufacturing high-grade tires. A thoroughly modern concrete plant is being erected. The officers are H. O. Smith, president; Thomas J. Northway, vice president; L. A. Fogler, secretary; C. C. Coddington, treasurer. The board of directors is composed of the above named officers and H. S. Leyman, D. H. McCullough and E. Thomason.

The Brunswick-Balke-Collender Company, Muskegon, Mich., maker of billiard tables, has entered the tire manufacturing field and has already ordered machinery. At first from 50 to 100 tires per day will be turned out, but in a year's time it is expected that the daily output will be from 1200 to 1500.

The Hoover Steel Ball Company, Ann Arbor, Mich., is erecting another large manufacturing building, 40 by 400 feet, which will make a total of five manufacturing structures for this year, beside a two-story office building. This addition will be completed in October and then the company will have an output of over 40,000,000 balls per day.

The Trippansee Manufacturing Company, Detroit, Mich., maker of motor car bodies, has increased its capital from $10,000 to $25,000, to provide for the enlargement of its plant.

The American Rotary Valve Company, Anderson, Ind., has changed its name to the Arvac Manufacturing Company. The plant is being increased and the company is now ready to quote on Arvac universal joints and propeller shaft assemblies for late summer and fall deliveries.

The Boston Artificial Leather Company, New York City, has changed its name to the Zapon Leather Cloth Company. The use of the word "Zapon" brings the Celluloid Zapon Company into closer relationship with the Zapon Leather Cloth Company. These two concerns have for more than a generation been closely affiliated, being owned and operated by the same interests. There will be no change in the personnel or management of the company.

The Auto Lamp and Radiator Company, 1614 Prospect avenue, Cleveland, O., has grown to be one of the largest concerns of its kind in the repair of lamps, radiators, fenders and metal bodies. The company is now doubling its quarters and will occupy from 1614 to 1620 Prospect avenue.

The Grant Motor Car Corporation, Findlay, O., received an order for 4500 cars from a Paris automobile company. The foreign concern has deposited with a local trust company funds subject to draft on delivery of the cars aboard steamers. The company's new plant has been completed and is running night and day to fill the order. It has a capacity of 150 cars a day.

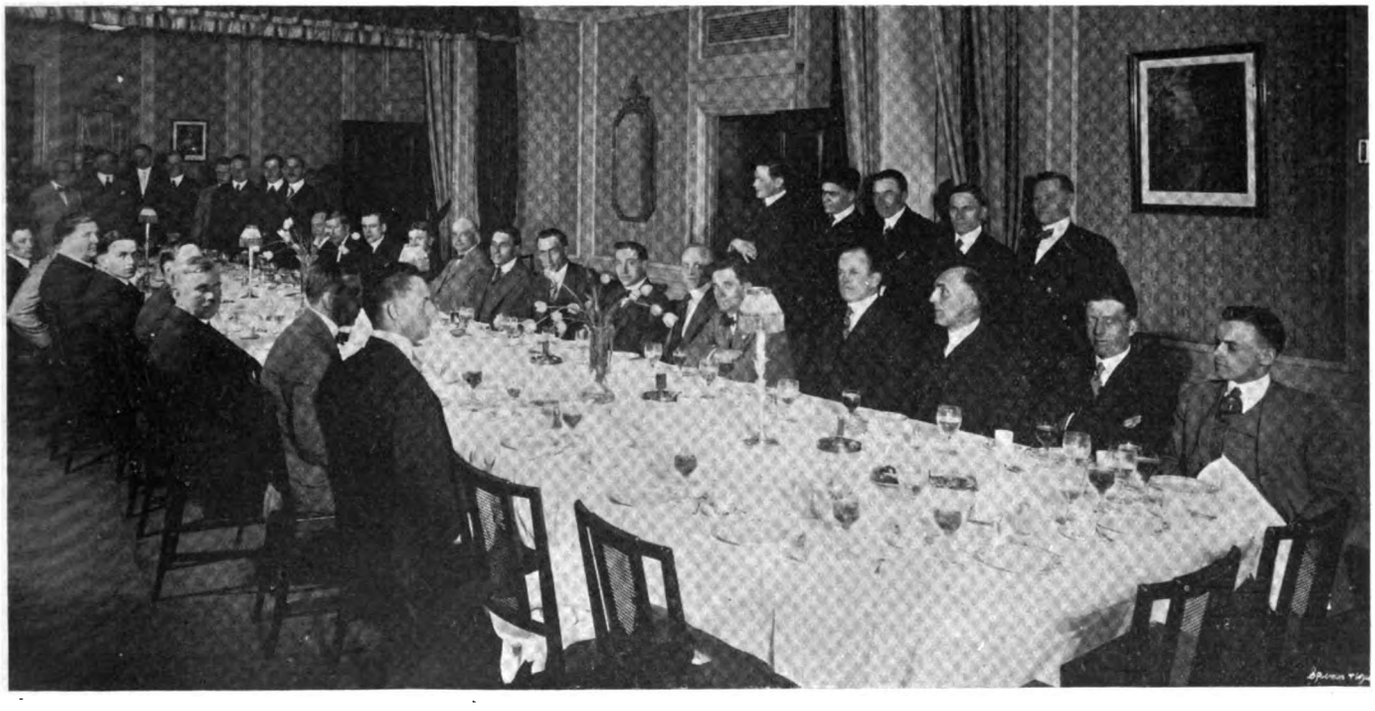
The Willys-Overland Company, Toledo, O., recently entertained the Chicago White Sox, the first ball team to visit the factory. The players did not make an extended visit through the plant, but were glad of the opportunity offered to visit the high spots of the biggest automobile manufactory in the world. The new administration quarters, building No. 75, where the light, economical model 75's are assembled, and several other places of interest were viewed.

The Thorney Auto Company, 1443 Cleveland place, Denver, will build a new salesroom and distributing station on Broadway, which, according to William Thorney, is designed to be one of the finest buildings of its kind in the city. The company will continue to handle the Apperson in its new quarters, as well as a line of machines entirely new to this territory.

The Ward Leonard Electric Company has moved into its new building, Mount Vernon, N. Y. The need of more space for labor operations was the reason for the company moving from Bronxville. The floor space has been increased approximately 50 per cent.

The England Manufacturing Company, making a specialty of pressed steel door panels for motor cars, and at present located in Detroit, has acquired a three-acre factory adjoining the plants of the Federal Motor Truck Company and contemplates building a plant comprising 50,000 square feet of floor space to enlarge its business in its specialty. The plant is to be ready for occupancy in 60 days.

The Four-Wheel Drive Automobile Company, Clintonville, Wis., is preparing to build another addition, 100 by 175 feet.



Thirty-Five Chalmers Distributors and District Managers, Shown Above, Were Guests of the Chalmers Motor Company at the Detroit Athletic Club Recently, and Discussed Selling Plans for the Coming Year—Among the Distributors Present Were: Harry Newman, Milwaukee; O. L. Halsey, Boston; R. V. Hess, Minneapolis; L. J. Robinson, Detroit; A. W. Wyckoff, Pittsburg; S. S. Prim, St. Louis; Carl Fischer, Cleveland; A. S. Zell, Baltimore; E. J. DeVille, Dayton; George Paddock, Newark; J. H. Boyd, Indianapolis; M. S. Hatch, Buffalo; C. A. Hamilton, Rochester; A. Burwell, Jr., Charlotte, N. C.; J. P. Parker, Memphis; C. M. Logan, Cleveland; C. W. Hancock, Melbourne, Australia, Charles Chalmers, Philadelphia.

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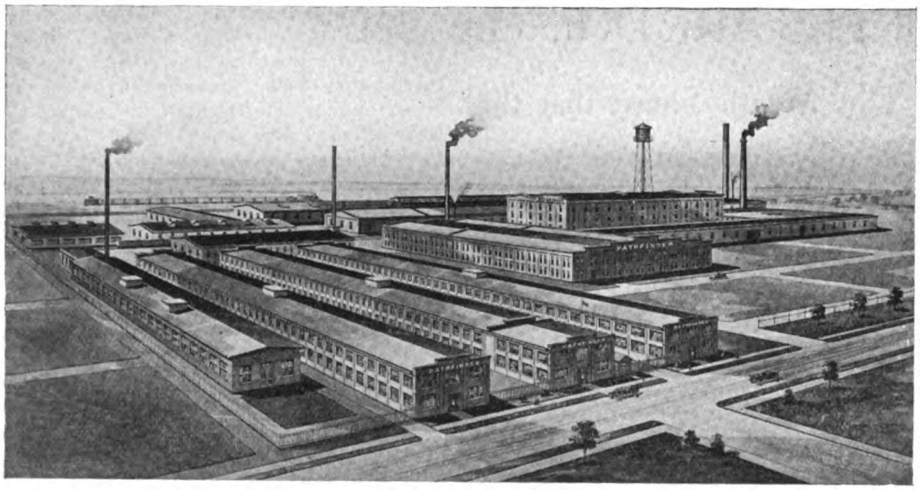

The Indianapolis, Ind., Plant of the Pathfinder Company, Manufacturer of the Twin Six of That Name and Which Ships Its Cars to Recognized Dealers in Five Foreign Countries, as Well as Those in the United States.

The Oakes Company, Indianapolis, Ind., manufacturers of automobile parts, accessories and metal stampings, has let contracts for a new one-story reinforced concrete, thoroughly modern, fireproof building, to be erected alongside the present plant. This building is especially designed for the class of manufacture in which the company is engaged and will provide about one-half more floor space. The new factory will be well lighted and in addition to being used for manufacturing, will also contain the new offices. It will be occupied about Sept. 1.

The Remy Electric Company has established in Detroit the most complete equipped laboratory ever devoted to the development of ignition, starting and lighting equipment for the motor. Unexcelled facilities for scientific research have been provided by a complete experimental machine shop, chemical and testing laboratories, together with the sales headquarters located on East Grand boulevard, Detroit.

L. H. Gilmer Company announces that on account of the heavy increase in the volume of business in Detroit and vicinity, and in order to allow customers to take up requirements direct with the company, it has found it necessary to terminate the agreement existing through a number of years with R. R. Ridgley Company. The company will open a branch office in Detroit, which will be in charge of a man well known to the trade and thoroughly capable of looking after the interests of customers.

The Thomas B. Jeffery Company, Kenosha, Wis., will add two big ultra-modern shop buildings to its huge plant. The new foundry will measure 125 by 600 feet and will be one-story high of reinforced concrete. All the latest and very best devices to be found in any factory will be installed in the new addition. The company has 3080 men on the pay roll which number will be increased as soon as the building is completed.

The Pathfinder Company, Indianapolis, Ind., manufacturer of the Pathfinder Twin Six, increased its export business over 300 per cent. during the months of March, April and May. Shipments were made to recognized Pathfinder dealers in five different foreign countries. This business did not include a single contract which might be termed "war order."

Fuller & Sons Manufacturing Company, Kalamazoo, Mich., has been running its plant day and night since last October and all conditions indicate that it will be necessary to continue the schedule of operation during the balance of the year. Two new buildings have been erected during the past few months and plans are being made for further additions.

S. S. E. Company, Philadelphia, Penn., has been organized by E. E. Smathers, president; C. B. Shaffer, vice president; Victor Lee Emerson, manager and treasurer. The company will erect a one-story steel and concrete automobile factory for production of high-grade motor cars. It will cover about 20 acres and will be ready for operation about Sept. 1. The company will employ about 700 men.

The Norma Company of America, 1790 Broadway, New York City, manufacturers of "Norma" high-precision anti-friction bearings, announces through its president, W. M. Nones, the purchase of a 10-acre factory site at Elmhurst, on the outskirts of Long Island City. The property fronts on Queens boulevard and has a depth of about 1000 feet abutting in the rear upon the main line of the Long Island railroad, from which a siding will be built directly into the plant. The company has, in five years, become prominently identified with the automobile industry. Beginning as importers of bearings, the merit of its product gained quick recognition among the manufacturers of ball bearing automobile accessories. Plans are now under way to provide for a four-story building 70 by 350 feet. It will be built of reinforced concrete.

The Inter-State Motor Company, Muncie, Ind., has closed agency contracts with the Dakota Kerosene Gas Company, Sioux Falls, S. D.; the Sanders-Cadillac Company, Shreveport, La., and Little Rock, Ark.; the Cicero Auto Company of San Antonio, Tex., and the Heading Auto Company of Denver, Col.

The Chalmers Motor Company, Detroit, Mich., through its president Hugh Chalmers, has offered to pay the full salaries of the first 50 employees to enroll for the summer training camps held under the auspices of the government at Plattsburg and Fort Benjamin Harrison. In a speech announcing the proposal Mr. Chalmers took occasion to state that he was heartily in favor of universal military service for every American youth, "because it is the best possible training for the strenuous civil life of today."

The Ford Motor Company is preparing to locate selling stations for Ford tractors in Russia. Gaston Plaintiff, who represents Henry Ford in many ways, having sailed from New York recently to take charge of the business in the Czar's empire. No details have been given out for publication.

Van Tassel & Kearney, for many years prominent in the horse and carriage trade, has devoted the 12th street end of their building, 125-127-129 East 12th street, New York City, to the display and sale of the well known Brockway trucks. W. L. Van De Wiele, formerly of the International Motor Company and the Garford Motor Truck Company, acting as sales manager. This business will be conducted as a branch of the Brockway Motor Truck Company, Cortland, N. Y., with Van Tassel & Kearney as branch managers. The Brockway truck of today is generally recognized as an efficient vehicle, as is evidenced by a recent order placed by the Adams Express Company for 33 two-ton trucks complete with bodies.

The Allen Motor Company, Fostoria, O., reports that during the past year it has shown an increase of 300 per cent. in the number of dealers handling the Allen popular priced cars.

The Champion Ignition Company, Flint, Mich., is said to be the only spark plug manufacturer in the world that manufactures every part of its A C plugs. During the first few months of the European war, Albert Champion, president of the company, feeling certain of a big advance in the cost of materials, placed very large orders for steel, copper and other materials used in the making of the plugs. In the vaults underneath the factory buildings are tiers upon tiers of tunnel-shaped store rooms in which are piled many tons of copper and steel.

The Hartford Suspension Company, Jersey City, N. J., better known as the makers of the Hartford shock absorber, and one of the pioneers in the industry, has decided to change its name to Edward V. Hartford, Inc. It has been made clear that this does not mean any change in the personnel or ownership of the company. In the early days the Hartford Suspension Company was organized for manufacturing and selling the Truffault-Hartford Suspension, subsequently called the Hartford Shock Absorber. Then its name seemed appropriate, but since the company has gone into making a number of accessories, the board of directors felt the name Hartford Suspension was a misnomer and a change was desirable.

The Dayton Engineering Laboratories Company, Dayton, O., has formed the Domestic Engineering Company. This

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was found necessary on account of the large demand for the Delco-Light system for providing electric light and power for farms and country houses. The manufacture of the Delco-Light is being carried out in a plant entirely separate from the Delco factory, in which it was developed. The system is a combination of gasoline motor and Delco starting and generating system with a storage battery and is automatic in operation, the battery being kept charged without attention.

The Auto Parts Manufacturing Company, Milwaukee, Wis., has increased its capital stock from $35,000 to $50,000. The company was recently reorganized and is growing so rapidly that it was necessary to provide a larger capital to accommodate the greater volume of business. Walter N. Schwab is general manager.

The American Brass Company, Waterbury, Conn., operating a large rolling mill and brass foundry at Kenosha, Wis., has made plans for improvements at Kenosha to cost between $1,600,000 and $2,000,000, and will make the local works the largest of the kind in the country. At Kenosha the brass mill will be enlarged by an addition 320 by 225 feet, and the foundry by an addition 320 by 200 feet.

The Standard Steel Car Company, Pittsburg, Penn., has broken ground for a new plant which will be over 1½ miles long and 60 feet wide. This is to be the assembly department and is to be without a single inside post or pillar through its whole length.

The Aluminum Goods Manufacturing Company, Manitowoc, Wis., which is building a five-story manufacturing building, 50 by 300 feet, will erect a 50 by 150-foot shop addition.

The King Motor Car Company, Detroit, Mich., was not affected by the recent purchases by Morgan & Wright, which took over the buildings now occupied by the Michigan Steel Boat Company and the King company. The boat company's lease on their buildings may expire next January, but the lease held by the King company has many years to run and the plant of the latter concern will be in no way disturbed by the Morgan & Wright purchases.

The Never-Skid Manufacturing Company, New York City, is now located at 122 Liberty street and the factory has been moved to Maspeth, L. I., at Merrill Brothers' plant. All communications should be sent to the company at 122 Liberty street and shipments of material to Maspeth, L. I.

The Martin V. Kelley Company, which ranks third among the advertising concerns in the United States, has opened a branch at 171 Madison avenue, New York City, Mr. Kelley, president of the company, having purchased the entire business of Bromfield & Field, Inc., which itself ranked as one of the important advertising agencies in the East. In connection with the purchase the Kelley company takes over the following new accounts: The Fisk Rubber, the Ajax Rubber, the Mercer Automobile, F. I. A. T., Boston Woven Hose and Rubber and P. Centemeri companies. The Kelley company's Toledo office does about $4,000,000 of business annually and among its accounts are the Willys-Overland, Stewart-Warner, Champion Spark Plug, Milburn Wagon, Electric Auto-Lite, Garford Motor Truck, Cole Motor Car, Abbott-Detroit, Springfield Body, Enger Motor and several other prominent manufacturing concerns.

The Victor Manufacturing and Gasket Company, 1950 South Troy street, Chicago, has experienced such a demand for its copper asbestos gaskets that it has been compelled to greatly enlarge its manufacturing facilities. On the original site of the plant a three-story, 100 by 125 feet addition has been erected, it costing complete about $40,000. This building is to be the first unit of an entirely new plant, which will represent a total investment of more than $140,000.

The Bell Motor Car Company, York, Penn., has increased its capitalization to $1,000,000, and has purchased a 15-acre factory site in East York, at Rockburn station, upon which modern manufacturing buildings will be erected. The company produces two models, a pleasure car and a light 1000-pound commercial car. Owing to the demand made by the automobile trade for Bell cars of both types, the production facilities afforded by the rented quarters of the company have been very greatly exceeded, and hence the new location. As soon as the new factory buildings are completed the concern expects to be able to provide employment for about 1000 employees.

The American Piston Ring Company, Baltimore, Md., is experiencing a steady and large demand from all parts of the country for its Perfection piston ring. According to recent arrangements, the N. A. Petry Company, 1309 Race street, Philadelphia, which represented the piston ring company in the Atlantic Coast states, will now have selling rights in all the United States east of a line north and south of Denver, Col. The Petry company is also putting out an improved muffler cutout, which is meeting with success.

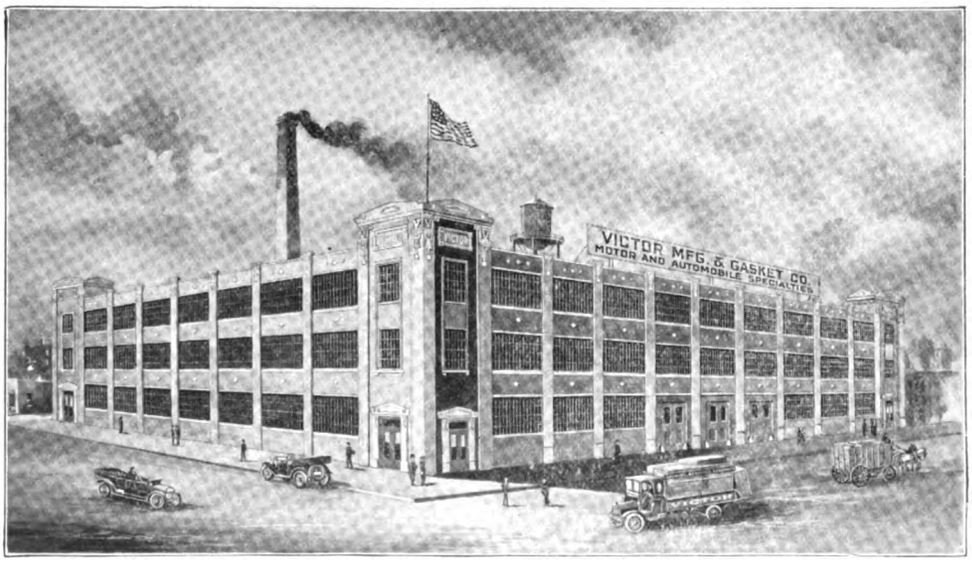
The Duplex Power Car Company, Charlotte, Mich., recently increased its capitalization by approximately 25 per cent. and is planning to build large additions to its present plant. These expansions are attributed to the great increase of the company's business and to provide facilities to keep pace with the demand for its trucks. A 10 per cent. dividend was declared recently by the company and it is expected that at the next annual meeting in August another distribution will be announced.

The Remy Electric Company of Boston, Mass., has moved from 214 Pleasant street to much larger quarters at 8 Motor Mart. John E. Troy is manager. In the new location the company has a large office, a big stock room, wherein is stored complete parts for all ignition specialties now used on a great number of popular cars; a fine, light workshop, where repairs and adjustments can be made readily, and a good sized garage, where cars can be left for repairs, adjustments and to have Remy systems installed.

The Motor Castings Company, Detroit, has organized to manufacture cylinder castings. The foundry is located on Hart avenue and the show room and general sales office have been opened at 997 Woodward avenue. The officers of the company are J. D. Curray, president; E. H. Briggs, vice president; W. T. Cullen, sales manager; J. A. Lanigan, general manager.

The Jordan Motor Car Company, Cleveland, O., has taken title to a tract of five acres it recently purchased. The first building, a $50,000 structure, is now being erected on the land.

The Chandler Motor Car Company, Cleveland, O., will pay to all employees on the pay roll of the company July 1, 1916, a sum equal to five per cent. on all wages paid, including overtime, to each employee during the year commencing July 1, 1915, and ending June 30, 1916. This amount will be paid with the July 20 pay roll.



The New Home of the Victor Copper Asbestos Gasket, Made by the Victor Manufacturing and Gasket Company, 1950 South Troy street, Chicago, Which Has Been Expanded by a New $40,000 Addition That Is Designed to Be the Nucleus of Huge Plant to Be Built in the Near Future.

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ACTIVITIES OF MEN YOU KNOW.

News of Prominent Members of the Manufacturing, Distributing and Retailing Motor Vehicle Trades.

H. D. Scully, who has been secretary of the Canadian Manufacturers' Association and of the Munitions Section of the Canadian Manufacturers' Association, has resigned from these organizations to accept an important position with the Russell Motor Car Company, Limited. Mr. Scully will become secretary of the Russell Motor Car Company and secretary and a director of its subsidiary company, Canada Cycle and Motor Car Company, Limited.

Levi C. Wade of 650 Summer street, Lynn, Mass., well known as a mechanical expert on motors and marine engines, has taken over the agency for the Inter-State motor car in Lynn, Swampscott and Saugus.

W. M. Nones was elected president and treasurer of the Norma Company of America at the annual meeting of the company at its headquarters in New York City. Prior to this Mr. Nones was secretary-treasurer, as well as general manager of the company. In this new position he will continue to direct the general management of the company, which has grown from a small import business to a commanding position among the American manufacturers of ball, roller, thrust and combination bearings.

Walter C. Hofer has resigned as special representative for the Lozier Motor Car Company, having been appointed to the sales organization of the Ross Automobile Company, Detroit, Mich., as district manager of southwestern territory.

W. R. Rehm has been promoted to the management of the Chicago office of the McGraw Tire and Rubber Company, East Palestine, O., succeeding H. A. Lamoree. F. H. Bronson, who has been a member of the general office staff, has been promoted to the position of assistant manager at Chicago.

Henry D. McCoy, well known in the trade along the Pacific Coast through his association with the Chanslor & Lyon Company, has disposed of his interests in that concern and organized the McCoy Motor Supply Company at San Francisco. H. L. Auger, formerly purchasing agent for the Chanslor & Lyon Company, has assumed a similar position with the McCoy company.

Charles H. Frizell has been appointed manager of the service station at Chester avenue and East 23rd street, Cleveland, O., for the Willard Storage Battery Company. He was formerly manager of the Omaha territory for this company.

J. H. MacDonald, formerly with the R. D. Britton Company, Velie and Allen car distributors in Hartford, Conn., is now of the sales force of the A. C. Hine Company, 314 Pearl street, Hartford, Conn.

F. R. Blair, formerly secretary, treasurer and sales manager of the S. K. F. Ball Bearing Company, has resigned and has become president of the F. R. Blair & Co., Inc., with offices at 50 Church street, New York City. Mr. Blair is engaged in developing motor efficiency devices.

Frank M. Eldredge, chairman of publicity for the commissioners of public safety of Greater Detroit, has tendered his resignation to the commissioners.

William Wylde is now again associated with the Carhart Motor Company, Oklahoma City, Okla. After leaving the Carhart company he was an automobile salesman in Wichita, Kan.

J. E. Erickson has joined the sales organization of the Packard Electric Company, Warren, O., and will cover the territory formerly in charge of Benjamin Smith.

Laurance Oliphant, an expert mechanical engineer and graduate of the Drexel Institute, who until recently was connected with the Remington Arms Company, has become secretary and treasurer of the Power and Efficiency Company, Trenton, N. J., manufacturer of a special line of spark plugs.

Alfred P. Sloan, Vice President and General Manager of the Hyatt Roller Bearing Company, Who Was Chosen President of the New United Motors Corporation.

Henry C. Snowden, hardware dealer, of Media, Penn., is covering 50 per cent. more territory with his truck than when he used horses.

Vincent Link, formerly chief engineer of the Universal Motor Truck Company, Detroit, Mich., has been engaged as consulting engineer of the Redden Motor Truck Company, New York City.

Henry Goodman, New York City, who was manager of the New York office of the Springfield Metal Body Company for two years, has incorporated the Goodman Auto Body Company and will handle the Springfield business in eastern territory. He will continue the office at 1737 Broadway. Mr. Goodman, who is president of the new company, was connected with the Pope Manufacturing Company for 18 years.

M. F. Chase, New England representative for the Owen Magnetic car, during the first six months in this position did about a $450,000 business, having sent specifications to the factory for 93 machines. Mr. Chase has leased 20,000 square feet of floor space in a new building in St. Mary's street, Boston, which will be used as a service station.

Albert S. Holley, one of the best known automobile men in New England, has joined the forces of the Jackson Motor Car Company, as general manager of retail sales. Mr. Holly has had long experience in the automobile business.

William L. Tedford has resigned from the Willys-Overland Company, Little Rock, Ark. He was state distributor for Overland and Willys-Knight.

A. B. Brandt will have charge of the automobile accessory department for Hurst & Co., Indianapolis, Ind. Mr. Brandt for many years has been a successful buyer and seller of automobiles, accessories, bicycles and supplies.

H. S. Lyman will represent Edward A. Cassidy, New York City. He was formerly Indiana factory and jobber representative for the H. W. Johns-Manville Company.

N. A. Beardsley has been appointed manager of the Buffalo, N. Y., Overland company. He was formerly a representative of the Willys-Overland company.

C. F. Robinson has joined the Jones Motor Car Company, Wichita, Kan., as assistant general manager.

Barney Baker is now branch manager at Fargo, N. D., for the Advance-Rumely Company. He was formerly sales manager of the M. Rumely Company, La Porte, Ind.

G. H. Howell is now division manager at Omaha, Neb., for the Marathon Tire and Rubber Company of New York City. He was formerly representing the company in Iowa.

G. Franklin Bailey, who recently joined the C. T. Silver Motor Company, New York City, distributor of Overland, Willys-Knight and Peerless cars, has been made director of branches.

H. Vanderbeek, chief engineer of the Timken Roller Bearing Company, Canton, O., has severed his connection. His successor has not been appointed.

R. J. Hancock, proprietor of the Colonial Trading Company, Melbourne, Australia, has been appointed direct factory representative of the Dort Motor Car Company in Australia and New Zealand.

C. F. Batchelder, for many years sales manager of the John Deere Plow Company, St. Louis, Mo., has become associated with the Dort Motor Car Company, Flint, Mich., as assistant general sales manager.

E. H. Reynolds, Jr., is now associated with the Paige-Detroit Motor Car Company and will act as a special representative. Mr. Reynolds comes from the Champion Ignition Company, Flint, Mich., a concern he was with for five years. He has acquired a thorough knowledge of conditions in the middle

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west and northern states and an intimate acquaintance with all motor car dealers in that territory.

William H. Lolley, formerly connected with the Simms Magneto Company and the Remy Electric Company, has joined the selling force of the Timken Roller Bearing Company, Canton, O., and now represents that company throughout the East.

H. J. Morehead has been appointed manager of the New York City branch of the B. F. Goodrich Company.

Gordon Smith has been made sales manager for the Vim Motor Truck Company, Philadelphia. He was formerly city sales manager and is succeeded by J. P. Cranston.

H. W. Gaston, formerly assistant manager of the eastern branches of the Reo Motor Car Company, has been made sales manager of the Lexington Motors New York Corporation, with headquarters in the Circle building. This corporation controls the Lexington output in New York, New Jersey, Connecticut and Rhode Island.

R. P. Pennock is now associated with the Reilly Motor Car Company, 1228-30 South Flower street, Los Angeles, Cal., distributor of Moon cars in southern California. He was formerly sales manager for the Lewis Spring and Axle Company as Los Angeles, Cal.

M. R. Hilts has been appointed assistant advertising manager of the Puritan Machine Company, Detroit, Mich. He was formerly connected with the advertising department of the Oakland Motor Car Company and the Paige-Detroit Motor Car Company.

Grant Lambright, superintendent of the Bucyrus Rubber Company, Bucyrus, O., will leave the company July 1 and will join the Marion Rubber Company, Marion, O., in a similar capacity. His successor will be John Field, now assistant superintendent.

E. J. Parker has taken the position of general supervisor with the Chalmers Motor Company, having jurisdiction over the territory from Fort William to the western coast. He is one of the best known automobile men in Western Canada.

A. J. Peebles, Columbus, O., has resigned as secretary and treasurer of the Ohio Automobile Trade Association, and has entered the rubber business. His successor will not be selected for several weeks.

A. J. Adams, formerly an engineer with the General Electric Company, has opened a repair shop at Lafayette and Lazell streets, Columbus, O., under the name of the Adams Auto Electric Service Company. He will specialize on the repair of electric systems on automobiles.

E. C. Andrews, Hartford, Conn., formerly of the Overland-Hartford Company, in its wholesale department, has accepted a position as Connecticut district manager of the Chevrolet Motor Company, Inc.

Joseph Christianes, New York City, whose Sunbeam car finished fourth in the Indianapolis 300-mile race, used standard Rajah spark plugs. Eight out of the 10 cars to finish the race were equipped with Rajah plugs.

John K. Stewart, president of the Stewart-Warner Speedometer Company, Chicago, Ill., died at his home, 12 East 87th street, New York City. Mr. Stewart became president of this company in December, 1913, at the time of the Stewart-Warner merger, when that company purchased the plant and patents of the Stewart & Clark Manufacturing Company, maker of the Stewart speedometer and also the plant and patents of the Warner Instrument Company, Beloit, Wis.

Walter H. Van Deusen, formerly commercial manager of the E. R. Thomas Motor Company and assistant general sales manager of the Chalmers Motor Company, and recently district sales manager for the A. Elliott Ranney Company, New York City, has been appointed director of sales for the Detroit Motor Car Company.

Martin V. Kelley, president of the nationally known advertising company

Martin V. Kelley, President of One of America's Largest Advertising Companies, Which Bears His Name.

bearing his name and located in Toledo, O., announces the acquisition of Bromfield & Field, Inc., another large advertising concern, in New York City, and the establishment of a New York City branch of the Kelley company at 171 Madison avenue. Mr. Kelley, who for several years occupied an important executive position with the Charles H. Fuller Company, Chicago, formed the Kelley company a little more than a year ago, and since then has been mainly instrumental in developing it into the country's third largest advertising company. No small part of the company's phenomenal success is attributed to Mr. Kelley's efficient handling of his own accounts, particularly that of the Willys-Overland Company, which he has directed personally for about six years.

J. E. Cunningham, for five years with the J. W. Maguire Company, Pierce-Arrow dealer at Boston, as truck salesman, has resigned to become manager of the Republic Motor Truck Company there.

G. W. Geiger, formerly selling Kissel-Kar and Mitchell cars at Springfield, Mass., has resigned to join the Stearns-Knight agency.

Samuel Isaacs, formerly with the O. G. Roberts Company, Columbus, O., Overland agent, has taken a position with the Oscar Lear Motor Car Company of that city, Central Ohio agent for Buick cars and trucks.

J. M. MacDowall, formerly of Pittsburg, has been made manager of the retail branch of the Ohio Electric Car Company at 1220 Madison avenue, Toledo, O.

H. F. Gundrim, York, Penn., formerly connected with the traffic department of the Pullman Motor Car Company, has been made traffic manager of the Bell Motor Car Company. Prior to his going with the Pullman company he was agent for the Western Maryland Railway Company in York.

H. Lauterbach, New York City, manager of sales for the New York branch of the Chevrolet Motor Company, has resigned to engage in manufacturing. With the help of others he has purchased the plant of a manufacturer in the Central West and will market a passenger car and a light delivery vehicle to sell for about $700.

J. R. Durst, Dayton, O., has succeeded W. O. Waldsmith as publicity manager of the Dayton Engineering Laboratories Company. Mr. Waldsmith will be general agent for the Delco-Light, the new farm lighting plant. His territory includes the eastern half of Missouri and about 15 counties in Illinois.

E. C. Evans, Grand Rapids, Mich., formerly with the Packard Motor Car Company, Detroit, has been appointed production manager of the United Motor Truck Company.

Orville Wright, one of the inventors of the aeroplane, was an honored guest to a dinner recently given at the Engineers' Club, New York City. Mr. Wright told how he and his brother Wilbur became interested in flying machines through reading of Otto Lilienthal's experiments.

W. J. McNeil, Worcester, Mass., manager for the Goodrich Tire Company, is arranging tours, notes of which he will send to every automobile owner in Worcester monthly. It is his intention to map out a trip which can be covered in a day.

Harold A. Richardson, formerly with the Walpole Rubber Company, is now with the Reo Automobile Company, which has a salesroom at 199 Grafton street, Worcester, Mass. He is a salesman.

Dario Resta won the second annual 300-mile automobile derby at the speedway at Chicago. Ralph De Palma was second, nearly a lap behind the leader. Dario Resta averaged about 98.7 miles an hour.

Joe Berlo, connected with the B. F. Goodrich Company's sales promotion department in Boylston street, Boston, was the recipient of many congratulations on the excellent showing he made in the 1000-mile endurance run of the Bay State Motorcycle Club from Boston to Buffalo and back. He rode an Indian motorcycle fitted with Goodrich safety tread tires.

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Richard Wolfe, Indianapolis, Ind., has been appointed district manager for the Pathfinder company. Mr. Wolfe is well known in automobile circles, being one of the pioneers and having had charge of the sales department of several of the largest automobile manufacturers.

B. J. MacMullen, Detroit, Mich., has joined the Chalmers Motor Company as assistant sales manager. Mr. MacMullen first started with the White company in 1907 and was connected with the New York branch for several years. In 1910 he joined the Willys-Overland company as factory and special representative and remained with the Overland for six years. He is widely acquainted with dealers in all sections of the country and will specialize in increasing Chalmers dealer efficiency.

P. H. Oggel has taken charge of the purchasing department of the Fuller & Sons Manufacturing Company, Kalamazoo, Mich. Mr. G. W. Fuller is now connected with the sales department.

J. E. Erickson has joined the sales organization of the Packard Electric Company, Warren, O., and will cover the territory formerly in charge of Benjamin Smith, who retires. Mr. Erickson's experience in the electrical field dates back to 1903, when he entered the employ of the Boston-Edison company. He next entered the engineering department of the Condit Electrical Manufacturing Company of Boston. After that he was transferred to Chicago as agent for the company. Two years later he took charge of the Cleveland office of the company and then resigned to go with the Cleveland office of the Western Electric Company, from which position he comes to the Packard Electric Company.

C. D. Clark, Torrington, Conn., has accepted the Vim agency for Torrington and the northern part of Litchfield county. Mr. Clark is one of the oldest and best known dealers in that section, having been in business for over 15 years, starting with bicycles and taking up automobiles when they first appeared as a commercial proposition. He will have a large show room for Vim delivery cars and will carry a large stock of sundries with a complete repair shop for service work.

Edward J. Curren, formerly assistant sales manager of the King Motor Company, Detroit, Mich., and also of the Paige-Detroit Motor Car Company, has joined the sales promotion division of the Regal Motor Car Company.

R. I. Sunderland, Los Angeles, Cal., is devoting considerable time to the Inter-State Motor Company's interest in California. Mr. Sunderland is well known to the trade on the western coast, having been connected with the automobile business for a good many years in many different capacities.

G. S. Skinner, Detroit, Mich., has been appointed a member of the Liberty Motor Car Company's sales division. Mr. Skinner has been connected during the past few years with the Canadian distributors for the Hudson Motor Car Company, and it was largely through his personal efforts that the Hudson became so popular in Toronto, Canada.

Walter Chrysler, Flint, Mich., has resigned from the Buick Motor Company. Mr. Chrysler has been in active charge of Buick manufacturing under Charles W. Nash, until recently Buick president.

H. H. Replogle has been made manager of sales for the Marathon Tire and Rubber Company, and now makes his headquarters at the home office in Cuyahoga Falls, O. He was formerly manager of the company's branch in Omaha, Neb., where he has been succeeded by G. R. Howell, who has been representing the company in Iowa.

Otis C. Friend, general sales manager of the Mitchell-Lewis Motor Company, Racine, Wis., is on an extended trip in the West. He will spend several weeks going over the field carefully with the Mitchell representatives in the various centres. On his return he will stop at Ogden, Salt Lake City and Denver.

L. F. Ohland has resigned as comptroller of the Buick Motor Company. He has been associated with the counting house end of Buick affairs for the past five years.

W. E. Stalnaker, Vice President and Director of Sales, Pathfinder Company.

W. E. Stalnaker, vice president and director of sales of the Pathfinder company, is not only interested in the automobile business, but is greatly in favor of military training camps. Mr. Stalnaker has taken the time to enroll in Fort Benjamin Harrison's Military Training Camp, feeling that no business men of today should be too busy to take up this important work.

A. E. Wingert, Detroit, Mich., has joined the sales department of the Chalmers Motor Company. He was formerly connected with the sales departments of the Lozier and Maxwell companies.

Alvan Macauley has been elected to the presidency of the Packard Motor Car Company, Detroit, Mich. He succeeds to the title held by Henry B. Joy ever since the purchase of the company by the present controlling owners 13 years ago and its removal from Warren, O., to Detroit. The change is very far from meaning that Packard is to be deprived of the counsels of the man who has directed its affairs for so many years. Mr. Joy, who is an ardent advocate of the principles of military preparedness, as applied to this country, has devoted much time to that work, in addition to other work of a broadly constructive nature. Mr. Macauley for some time has been virtually performing the duties of the president's office.

Gaston Plaintiff, who has been head of the Long Island City, N. Y., plant of the Ford Motor Company, and is also a personal representative of Henry Ford, has sailed for Europe. He will visit the Scandinavian countries and Russia and probably also Germany and Holland, in the interests of the Ford tractor.

John C. Neale has been appointed general manager of sales for the Midvale Steel Company, Philadelphia, Penn. He was formerly president of the Central Steel Company, Massillon, O.

Cecil M. Billings has become chief draftsman for Fergus Motors of America, New York City. He was formerly chief engineer for J. M. Lansden.

E. W. Weaver has resigned from the Ferro Machine and Foundry Company, Cleveland, O. He was chief draftsman and had formerly been connected with the Peerless Motor Car Company and later with Gray & Davis.

W. S. Quigley is now president of the Quigley Furnace Specialties Company, New York City. He was formerly vice president of the Metals Production Equipment Company.

J. G. Vincent, vice president in charge of engineering for the Packard Motor Car Company, Detroit, has been elected a member of the council of the Society of Automobile Engineers, to serve for the rest of the year. He fills the vacancy created by the death of E. R. Hall.

W. H. Brunning and H. M. Benedict have taken positions in the engineering department of the Oakes Company, manufacturers of automobile parts and metal stampings, Indianapolis, Ind.

W. L. Clark, who has been identified with the selling of automobiles in Bangor, Me., for several years, has taken a position with the Utterback-Gleason company, as salesman of Dort and King cars.

E. H. Dart, formerly connected with the West Massachusetts Cadillac Company, is now in the sales department of the Reo Springfield Company, Springfield, Mass. Paul Lisk has been appointed in charge of the service station of that company.

William C. Hunt is now advertising manager of the Packard-Cleveland Motor Company. He was formerly with the advertising department of the Hudson Motor Car Company.

Preston A. Berry has been appointed sales manager of the Premier Motor Car Company of Indianapolis for the Pacific Coast and Hawaii and will have offices in San Francisco. Mr. Berry was formerly sales manager of the Pacific Car Company, Tacoma, Wash.

W. L. Smith has been appointed director of sales for the Argo Motor Company, Inc., Jackson, Mich. He has been the Argo distributor in the East and South since the first car was put on the market. He also acted as special representative in the East for the Argo interests.

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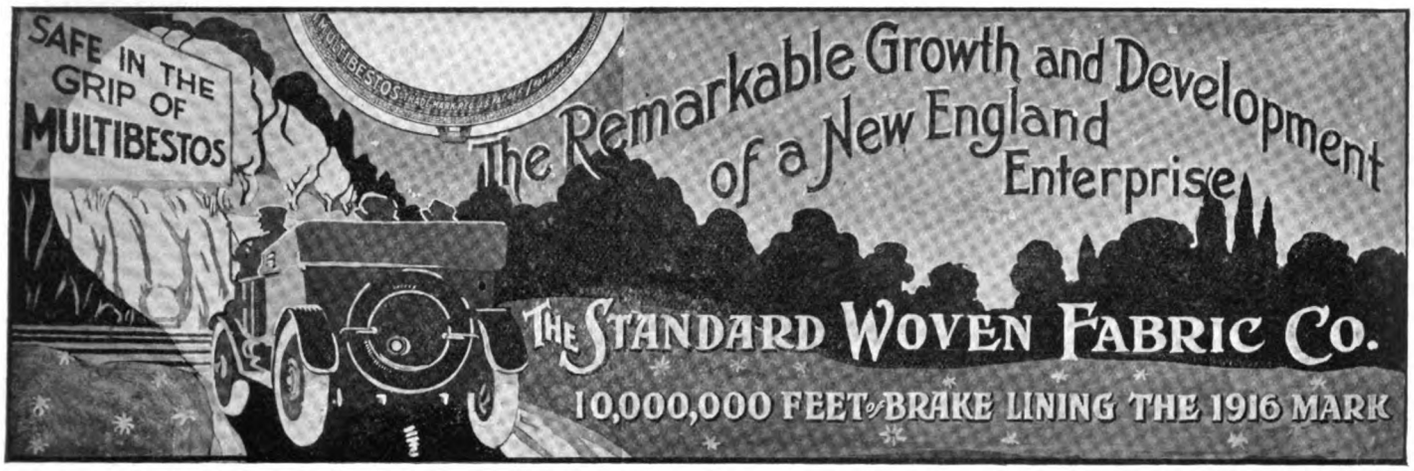
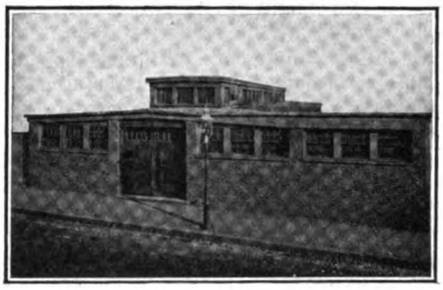


AS ONE watches motor cars weaving through the congested traffic of a city's streets, stopping instantly when collisions seem imminent and continuing when there is a clear passage, he is impressed by the absolute control of the driver of the powerful car he guides so easily. It is a striking demonstration of man's mastery over a complicated mechanism that is vastly more powerful than the strongest human being.

The impression becomes more profound when one considers that this control is largely possible through the operation of a comparatively narrow band of fabric which has been spun and woven out of rock mineral. The conception of the importance of this band, the brake lining, in the operation of motor vehicles, grows in proportion as one realizes that it is the one safeguard against accident and disaster when traversing the highways of the country, particularly on steep hills and at cross roads.

One may conjecture a car load of tourists rushing down a steep grade at the maximum rate permissible by the law.

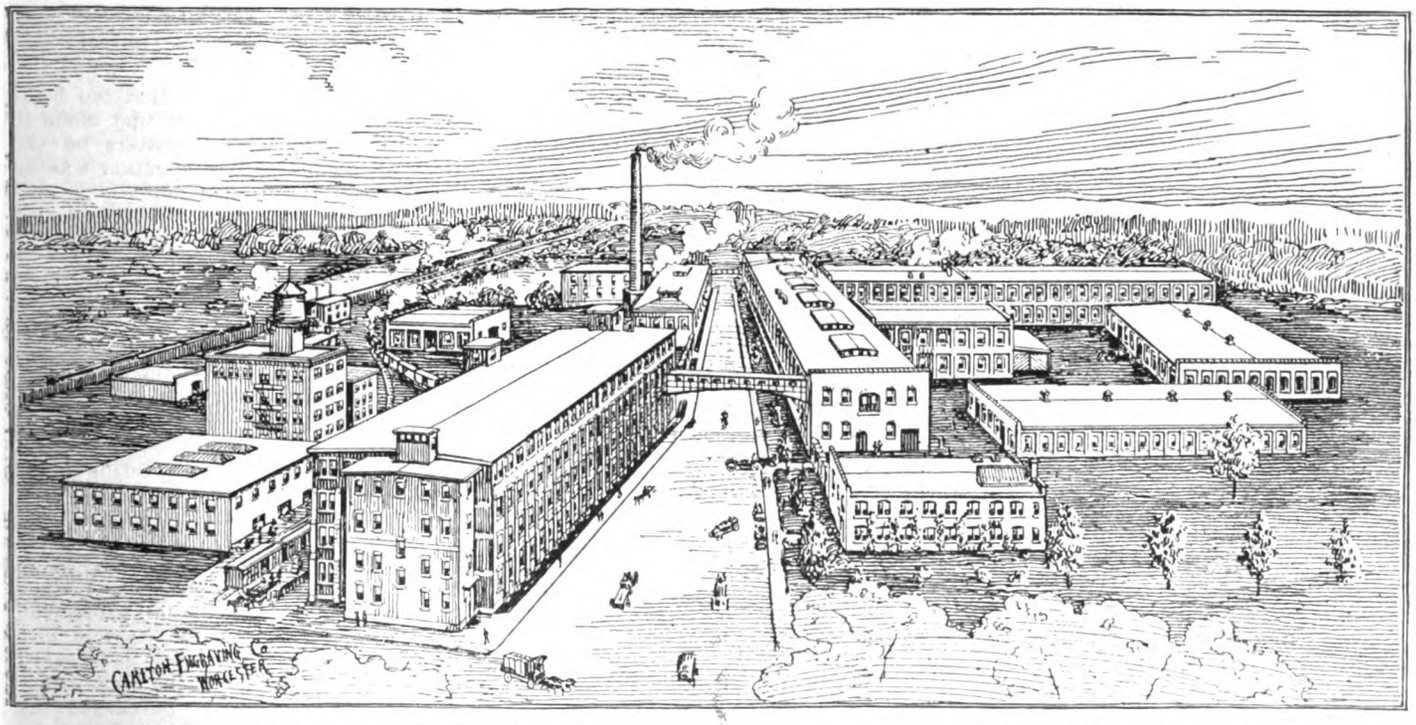


"The Cradle" of the Standard Woven Fabric Company, the Original Plant at Worcester, Mass.

The motorists are gay from the exhilaration of the drive, with never a thought of danger. Suddenly from a cross road dashes another automobile, or possibly a group of school children run into the way. It is then that the brakes must be used quickly and be highly efficient to avert injury or death. That efficiency is largely dependent upon the condition and quality of the brake linings. If these fail the safety of every person may be threatened.

It probably was with such needs as these in mind that an eminent engineer declared that it is more important to stop than to start a motor car. A brake incorporated in a motor vehicle does not necessarily mean that the driver has absolute control of it; the brakes, and particularly the linings of the brake shoes, must be in perfect condition for effective operation. The brake shoes are vitally necessary parts of cars, and one automobile engineer has said that owners should be required by law to have brakes that will have certain efficiency standards, just as they now are compelled to have lights, numbers, etc.

This emphasizes the importance of brake linings, a part of the car of which few motorists have thorough knowledge, even though the brakes are so essential to the safety of those who ride in power driven vehicles. A stiff black band of rough material, it has no attractions for the observer. But its use is almost constant and to insure efficiency care must be taken to have it so that its fullest utility may be realized when needed.



The New Home of Multibestos at Walpole, Mass., a Huge $500,000 Plant, Containing 175,000 Square Feet of Floor Space and Equipped with the Most Modern of Machinery—The Facilities of This Plant Will Bring the Production of Multibestos up to 35,000 Linear Feet Daily During 1916.

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The brakes must be always well adjusted and they must be used intelligently, else there will be unnecessary and destructive wear.

The reader should fully understand the composition of the fabric by which his life and property are safeguarded every time he drives or rides in a car on the highway. He should know how necessary it is that the brake shoes or bands be faced with bands of fabric which will resist the tremendous heat that is generated every time the brakes are applied to stop a car.

Early Types of Brakes.

In the infancy of the automobile industry, car builders equipped their machines with brakes of the metal to metal type. At first this practise was almost universal, chiefly because no satisfactory facing was known. At the beginning of the 20th century automobile brakes were faced with leather or cotton fabric. Both wore quickly, became charred and brittle, failed to clamp the drums satisfactorily when saturated with gasoline, oil or grease, and were rapidly cut by such abrasives as found lodgment on their surfaces.

Arthur H. Burdick, Treasurer and General Manager.

As the speed, power and weight of motor vehicles became greater, the industry sought a friction material that would adequately meet its requirements. Engineers searched assiduously and finally the solution was found in asbestos. This rock mineral has exceedingly high powers of heat resistance and is a non-conductor of heat. It has qualities that are ideal for frictional brake purposes, but how to adapt it was the next problem. In its original state it was difficult to so utilize it that it would not disintegrate under pressure, or would not glaze or wear to uneven surfaces.

Among those who experimented with the problem of adapting asbestos for brake lining were the engineers of the Multiple Woven Hose and Rubber Company, which, in its plant at Worcester, Mass., was engaged in the manufacture of solid multiple fire hose fabrics and solid cotton belting. This company was peculiarly qualified to undertake this work, its equipment including weaving and treating machinery and its management being thoroughly versed in the construction of such machines. The company worked out the practical solution of making asbestos fabric suitable

Stoughton Bell, President of the Standard Woven Fabric Company.

for brake lining by building special looms for weaving it and compounding a chemical formulae for treating the bands. As a result it began the production of Multibestos, a brake lining fabric which today is standard in automobile brake construction.

The prime reasons for the almost instantaneous success of Multibestos are suggested by the name of the fabric. The first half of the word implies that the fabric is a multiple weave, while the last half suggests the asbestos of which it is made. By multiple weave is meant a solid weave in which every thread is tightly bound into a solid mass, it having no loose plies to break under the stresses of brake service, nor containing "stuffers," which is the trade name for layers of loose threads placed between the outer plies solely for the purpose of making the brake lining of a desired thickness.

Features of Multibestos.

In Multibestos the different thicknesses are obtained wholly by the number of solid weaves of the fabric, which makes an interlocking web of asbestos yarn. It was upon this feature of manufacture that the success of Multibestos was and is based and the Multiple company was the first to manufacture brake lining of this type. In 1911 its business had grown so large that a new concern, the Standard Woven Fabric Company, was incorporated to take it over and provide larger production facilities. In the four years the Standard company

T. J. Daley, Sales Manager.

has been in existence the sales of Multibestos have increased more than 1000 per cent. over the sales during the first year of operations.

At the outset the manufacture of brake lining was simply a side line; today instead of being a by-product it is the company's main business. It is interesting to observe how this change came about. In 1911 the production of Multibestos constituted five per cent. of the total business. In the following year it amounted to 11 per cent.; in 1913 it leaped to 75 per cent., and in the next fiscal period increased 10 per cent. more.

The astonishing increase in the year 1913 is accounted for by the fact that it was then that the company's two plants in Worcester were abandoned for a new and larger factory in Framingham, Mass., one that afforded 50,000 square feet of floor space and adequate facilities for quantity production. At the time of removal even the most optimistic member of the management felt that there was ample room to take care of any requirements of expansion that could reasonably be expected. This impression did not endure long, however, for early

Frederick J. Gleason, General Superintendent.

in 1915 it became evident that the business was growing at a rate that made it imperative that larger quarters be obtained immediately if production was to be kept equal with demand.

The Plant at Walpole.

With this decision begins the third and latest chapter in the growth of the Standard Woven Fabric Company and the production of Multibestos. While considering the addition of new buildings and extensions to the Framingham plant, sufficient to triple its capacity, it was learned that in Walpole, Mass., about 15 miles away, was a highly organized and comparatively new manufacturing plant peculiarly suited to the manufacture of brake lining and mechanical rubber goods made by the Standard company. This plant, comprising 175,000 square feet of floor space and including about 75 acres of land available for future expansion, had been developed for the Walpole Tire and Rubber Company, which had ceased operations. Recognizing the opportunity the Standard company purchased the property immediately and abandoned the idea of enlarging the Framingham plant.

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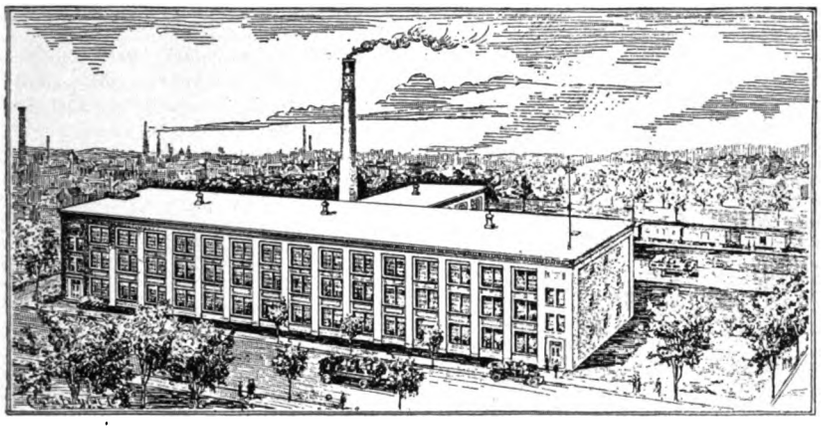


The Framingham, Mass., Plant of the Standard Woven Fabric Company, Which Marks the Second Step in the Development of the Manufacture of Multibestos.

One factor that influenced the purchase was that production could be started there without loss of time, which would be the result if additions were to be built at Framingham.

The negotiations were concluded Dec. 14, 1915, and without delay the company took possession and made such changes as were necessary. Under the Walpole regime the buildings had been developed into an ideal manufacturing unit; they were all comparatively new and of concrete and brick construction, the oldest being not more than five years, and they were laid out in accordance with the latest approved factory construction practise. The aggregate value of the plant and real estate was put at well over $500,000.

Four months after acquiring the Walpole plant the production of the Multibestos had been increased to about 25,000 linear feet a day, or 7,500,000 a year. And this huge production was made at a time when only a small part of the Walpole factory had been equipped with machinery. When all the new high speed machinery and extra weaving equipment with which this plant is to be provided has been installed the output will be approximately 35,000 feet daily, or 10,000,000 annually.

Uses of Multibestos.

These figures well illustrate the use made of Multibestos in the automobile industry. It is standard on both high and medium pleasure cars and trucks, and is indorsed highly by repair men and garage workers throughout the country for brake linings and for clutch facings. In other lines of industry it has been adapted for use on elevators, cranes, hoists and numerous other mechanisms having frictional stop and start.

The process by which asbestos, which comes from the mine much in the same form as coal, is metamorphozed into a stiff, but yielding fabric, is a very interesting and instructive one to watch. The asbestos rock comes from Canadian mines by the car load and is crushed into a mass as fluffy as elder down under heavy steel rollers in the yarn makers' factories.

Until recently the manufacturers of Multibestos depended altogether upon the yarn manufacturers for their supplies. Since the demand for asbestos yarn has increased to such enormous proportions as it has in recent months, there have been a number of occasions when it seemed that the company would have shut down its entire weaving department because of the failure of the yarn maker to deliver a shipment on the date promised.

Insuring Quality.

To offset such possibilities and to insure quality the company has installed apparatus with capacity sufficient to guarantee that a certain amount of yarn will always be on hand even though the yarn manufacturers do fail to deliver on time. Thus the makers of Multibestos are now conducting in the new Walpole plant every operation in the manufacture of brake and clutch lining.

The crushing machine, the first step in operations, is housed in a small concrete building adjacent to the larger structure in which are the carding and spinning machines. Here the asbestos rock is crushed and its fibres separated, after which it goes to the picker, an ingeniously contrived apparatus, which combs out the fibres so that they all lay in the same direction. This operation also separates the extraneous matter and dirt from the asbestos stock.

The next step is indicative of the completeness of organization of the plant. The cleaned stock automatically passes into a small room at the rear of the picker. From here it is blown through a large galvanized tin pipe from the picker and crusher house to the second floor of the neighboring building, where the carding machines are located.

In this department, which is very spacious, there are four air tight rooms into which the asbestos stock is conveyed by blowers. Each of these compartments is situated conveniently to the carders into which the asbestos stock passes next.

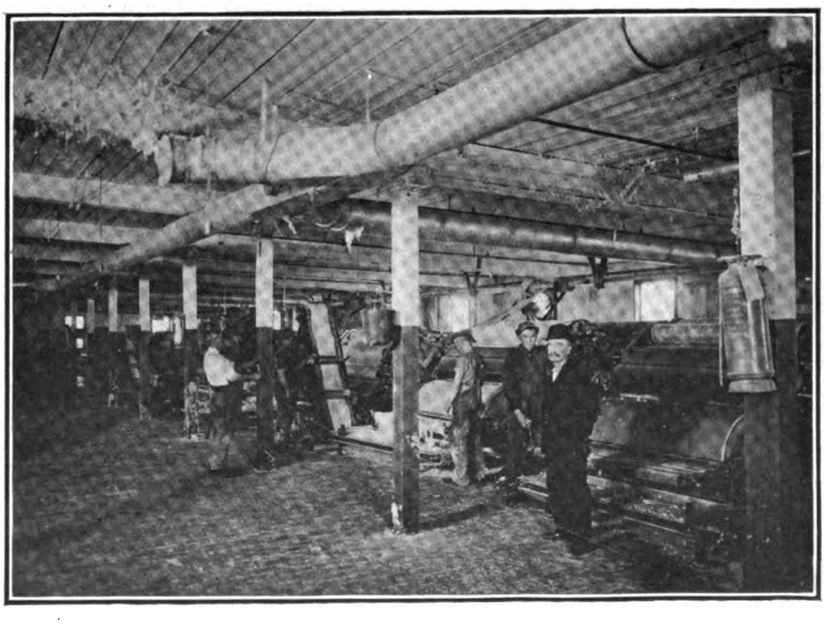
Combing the Asbestos.

The carding machinery is standard type and is similar to that used in the cotton and woolen industries. A carding unit really consists of two machines, one of which is known as the "first carder." This machine breaks up the tangled masses of stock as it passes between cylinders on which are wire teeth of varying size and distances apart and combs it out into sheets in which the fibres all lay one way.

From this machine the asbestos goes to a finishing machine. This apparatus resembles the other, but instead of combing the fibres it twists them into slender and continuous threads. This is done by a series of rollers alternately working sideways, much after the fashion in which a person twists strings between one's fingers. This thread is automatically wound on spools.

At this stage of operations the asbestos first resembles the yarn that will ultimately be used for weaving purposes, but it is too weak to be of practical use. It must be twisted still more and be wound around a brass wire core.

From the carding department the twine is taken to the spinning room, on the ground floor of the same building, where a battery of mules twist the threads until they can be handled without breaking. In this department the mule spinners each have 468 spindles, which is a larger number than is used at this time in any industry, not excepting



The Asbestos Carding Department, This View Showing a Small Portion of the Battery of Machines by Which the Tangled Masses of Fibre Are Straightened and Twisted Into Slender Threads.

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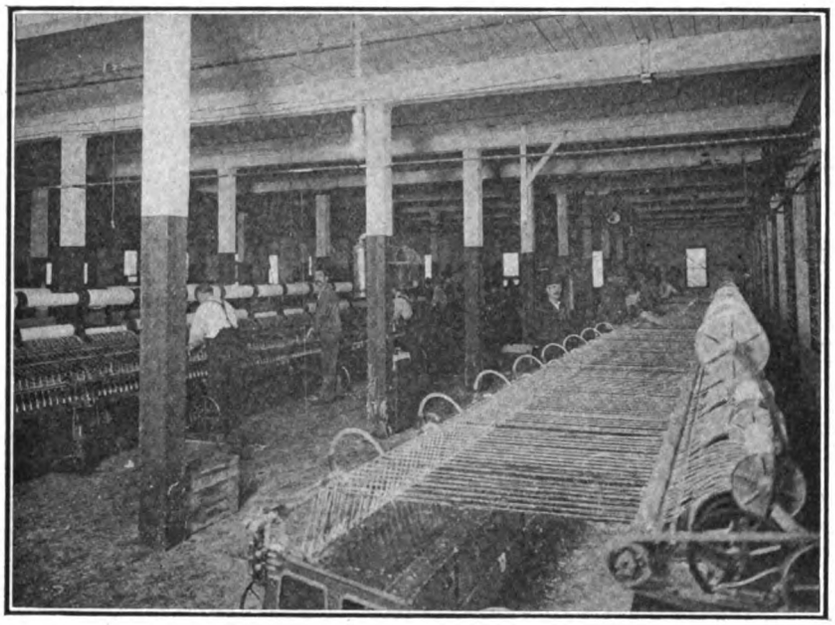

The Mule Spinning Room, Where the Yarn Is Further Twisted to Increase the Tensile Strength—These Spinning Machines Each Have 468 Spindles, Which Is the Largest Number Used in Any Industry.

cotton, silk or woolen mills.

In these departments one is aware of a cool and moist atmosphere, which is a potent reason for Multibestos quality. If one were to investigate he would find that in the engine room of the plant there is a compartment like a shower bath in which water is sprayed before a powerful fan, which forces the air into large pipes and circulates it throughout the whole factory. By this method, which is known as "washing the air," or humidifying, the atmosphere is not only kept free of impurities, but that degree of moisture which makes for the best results in spinning yarn is constantly maintained. It has been found that in humid atmosphere the yarn breaks less frequently than in dry air.

Incorporating Brass Cores.

At one end of the spinning department are the spooling frames, whereon the asbestos yarn is twisted around brass wire cores, which are incorporated in all Multibestos brake and clutch lining and gives that surprising strength and flexibility noticeable in the finished product. The customery make-up of this thread is three plies of asbestos yarn to two strands of wire.

Owing to the fact that at present there is not sufficient weaving equipment installed in the new Walpole plant to weave its entire output of yarn, a large part is transported to Framingham to be woven into Multibestos. However, a considerable part is woven in the new Walpole plant, and by the special weaving machinery which the company's engineers have perfected to economize one of the chief sources of large loss in weaving brake lining fabric.

In the old type of loom there are from four to 20 "spaces," that is, there are that number of pieces of brake lining being woven simultaneously. The chief objection to this type of loom is that when it is necessary to stop one "space" every other "space" on that machine must also be stopped. This means that because one piece of yarn has broken or a spool has been emptied, production must cease on all other pieces, even though there is no "fault" in those "spaces." This has been a great source of loss in weaving, and an exceedingly vexatious problem for yarn producers.

In the new type of loom built by the Standard Woven Fabric Company, each "space" is independent of the others, which not only obviates the necessity of stopping the whole battery of "spaces," but allows the operators to run each at much higher speed than was possible in the past. The new type of machine does not increase the number of workers, because one operator can easily take care of 12 of these new looms.

Weaving is the critical period of brake lining manufacture. Inexperienced or careless operatives can weave the fabric so loosely that it will be useless for motor vehicle uses. Consequently, the Standard Woven Fabric Company employs none but skilled operatives and places their work under the supervision of an expert weaver whose sole duty is to oversee the weaving operations. This careful inspection is carried out still further in the operations that follow.

Wide Variety of Sizes.

Some idea of the capacity and flexibility of output of these looms can be gathered from a study of the various dimensions of the fabric turned out. Because of the wide range of uses made of Multibestos in motor vehicles and other power driven machines, these looms are adjustable, so that the material can be woven to thicknesses of ⅛, 5/32, 3/16, ¼ and 5/16 inch, and in widths varying by quarter inches from one inch to 20 inches.

This variation in thicknesses is not obtained by using "stuffers," as was pointed out before, but by increasing the number of longitudinal and transverse threads woven into the fabric in a solid mass. Variations in widths are obtained in the same manner. That is why the lining produced by this company is called Multibestos, because of the multiplicity of weaves used.

Another manufacturing economy that the makers of Multibestos use to provide for quantity production, is the method of feeding the yarn to the looms from "beams," which are huge metal spools holding a much larger quantity of yarn than can be wound on the ordinary creels. The yarn is wound from the creels onto the "beams" by special machinery.

As the fabric is woven it is automatically wound on reels for convenience in handling and is then sent to the treating department, where it is immersed in a special chemical compound, which permeates every fibre and makes the fabric impervious to heat, dust, water, oil and grease. At this point the processes of making brake and clutch linings differ.

The Chemical Baths.

The reels of fabric are placed on revolving axles and fed into the baths, that intended for brake lining going into one

Yarn Twisters, or Spooling Frames, Where the Asbestos Yarn Is Interwoven with Brass Wires to Produce That Surprising Strength and Endurance for Which Multibestos Is Noted.

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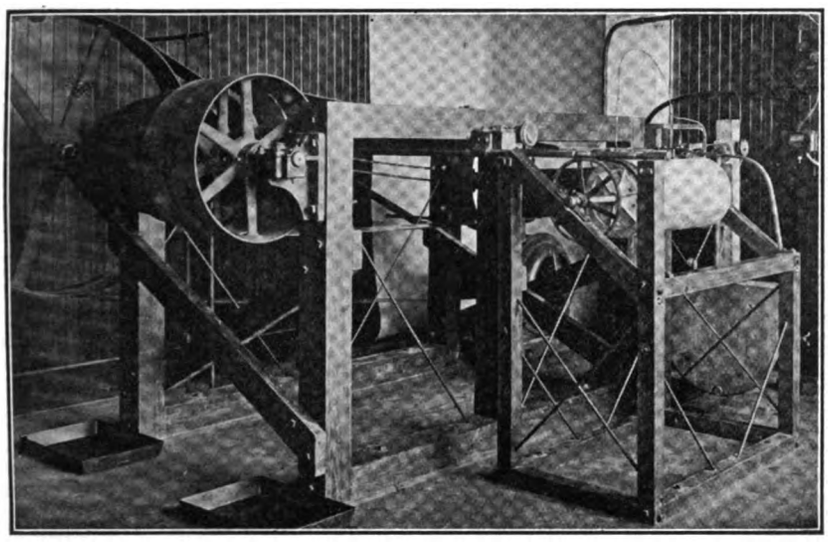

Section of Testing Department, Showing Special Apparatus by Which Brake Lining Is Subjected to the Same Conditions Obtaining in Actual Service.

bath, while that for clutch facings is fed into another, which is composed of a different combination of chemicals. Directly behind these baths is the drier, the temperature of which is maintained at a constant by a special constructed heating system. From the baths the fabric passes into the drier, which has capacity for 3000 feet at one time and about two hours is required for it to pass through on the scores of rolls on which it is revolved. When the fabric has come out it is thoroughly dried and impregnated with the compound and has had a uniform treatment.

From this department the fabric is fed through gravity elevators to the calender and stock departments on the ground floor. The calendering operation consists of compressing the fabric between steel cylinders and to simultaneously form the selvedge edges and stencil the trade name of Multibestos and the white foot prints at regular intervals on the fabric. The prints are plain white lines, which run across the surface at exact intervals of one foot. They are not only distinguishing marks that identify the fabric, as Multibestos, but serve as a convenient guide for the dealer in cutting off lengths to fill orders.

From the time the raw asbestos mineral is received at the plant until the finished fabric is packed for shipment, Multibestos is constantly subjected to inspections, all of which are just as thorough as that described in connection with the weaving operations. While being fed into the treating compound the work men examine every inch of material as it unwinds before them. Others watch it just as closely as it comes from the gravity elevator into the calendar department, and the men on the calendering machines inspect it as it passes under their vision. The final inspection comes when the finished roll is passed into the stock room, the stock clerk closely examining each roll to determine that it is up to Multibestos standard. Those portions which are defective, and the proportion is exceedingly small because of the extreme care taken in every operation, are thrown on the refuse pile. Having made Multibestos a trade name for high quality, the company's officials do not endanger this reputation by allowing any part of the product to leave the factory unless it is up to their high standards.

As the brake lining fabric leaves the calendering machine it is automatically wound on reels in 100 foot lengths. Special lengths are made as ordered. The fabric intended for clutch facings is delivered to the clutch department, where it is worked into the different shapes required for disc and cone clutches.

As a further guarantee of quality samples of fabric are periodically subjected to special tests, these reproducing the same conditions as lining would receive in actual service. The room in which the tests are carried out is very interesting, it being equipped with special scientific apparatus which was designed by the company's engineering staff.

Personnel of the Company.

It has been said that to one man more than all others belongs the credit for the growth and prosperity of the Standard Woven Fabric Company. That man is A. H. Burdick, who has been the treasurer and general manager since the original incorporation of the company in 1911. He is a man of wide business experience and has demonstrated that he is a tireless worker. Before associating in the making of Multibestos, Mr. Burdick was at the head of the purchasing department of the General Electric Company at Schenectady, N. Y.

Another widely known and forceful member of the company's personnel is Frederick J. Gleason, who founded and for many years was the general superintendent of the Walpole Tire and Rubber Company. In that capacity Mr. Gleason became distinguished in the rubber industry because of his original work in the compounding of rubber and the manufacture of rubber goods. In his new connection, Mr. Gleason has charge of the factory interests, a position for which he is peculiarly fitted.

The presidency of the company is held by Stoughton Bell of Boston, he being active in this capacity and also serving as the company's general counsel. The sales department is in charge of T. J. Daley and it is largely through his efforts that the company has secured numerous contracts for brake lining and clutch facing from the leading motor car manufacturers.

The foregoing paragraphs have been devoted to the production of brake and clutch linings because these are parts of a motor car in which automobile owners and operators are most interested, and because they form the greater part of the Standard company's production. The other items of the output are rubberized cotton cloth, friction and tire tapes and insulating compounds, corrugated matting and insulating varnishes, all of which have the same high degree of reputation for quality as Multibestos brake and clutch linings.

Special Apparatus by Which Asbestos Yarn Is Tested for Tensile Strength, Weight, Twists and Other Factors That Make for Good Brake Lining.

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N. A. T. A. HEAD ISSUES WARNING.

Robert Bland, President of the Association, Discusses Some of the Chief Factors That Militate Against Success.

Robert Bland, president of the National Automobile Trade Association, one of the leading organizations of its kind in this country and exerting a powerful influence in the accessory and parts industry, has issued a warning to dealers, wholesalers and car owners against the practise of demanding and conceding prices for parts and services that are so low as to prohibit reasonable profits. Mr. Bland's letter follows:

Some time ago when the garage operators first began to receive dealers' prices, a few of them thought it would be or could be used as a lever to secure the patronage of the car owners of their vicinities. Consequently, they dropped a quiet hint that the car owner could save money by buying accessories and supplies at that particular garage.

In other words, they offered the car owner the benefit of the low prices they were receiving. If they did not have what was wanted they gave a customer an order for the goods on the wholesaler.

What the wholesaler could not understand, when he began an investigation, was what the garage operator was getting out of it. After getting a line on the situation he concluded that if the garage owner did not care to protect himself, he, the wholesaler, was not particularly anxious to extend undesired protection, especially when it might cost him heavy sales.

So he turned to with a will and began to sell indiscriminately to any one who came along. That condition continues in a halting, limited way. It is so bad now that some concerns will not honor a request from a garage man. Having tasted the sweets of wholesale prices, the car owner who was "next" began to demand them as a right. Some of them perhaps thought the garage man was receiving much better discounts than they gave to customers.

Things are righting themselves slowly. Instead of demanding wholesale price, some patrons of garages are contenting themselves with a modest request for a 50-50 split.

The condition is far from a healthful one. All three, garage man, wholesaler and car owner, are doing their share to keep it in that state.

The worst phases of this condition have passed. Supply houses, manufacturers and garage men have partially awakened to the chaos that has been ushered in and are trying to straighten things up. Its a big job, for the car owner, who would not think of asking his grocer, his butcher, his druggist or any other retailer to sell at wholesale, who realizes that it would be foolish to do so, persists in demanding a split or all the profit to which the garage man is entitled on the things he sells or should sell.

The garage man must "get his" in some way. If he is forced by himself, his competitors or his customers to forego a legitimate profit on what he sells, then the profit must be made from storage, washing, repairs and the things which the garage man furnishes and for which he charges more than they cost.

There is no more reason why the garage man should furnish accessories and supplies at cost than that he should furnish storage, should wash cars, or repair cars and charge the customer exactly what the work cost him, the garage man.

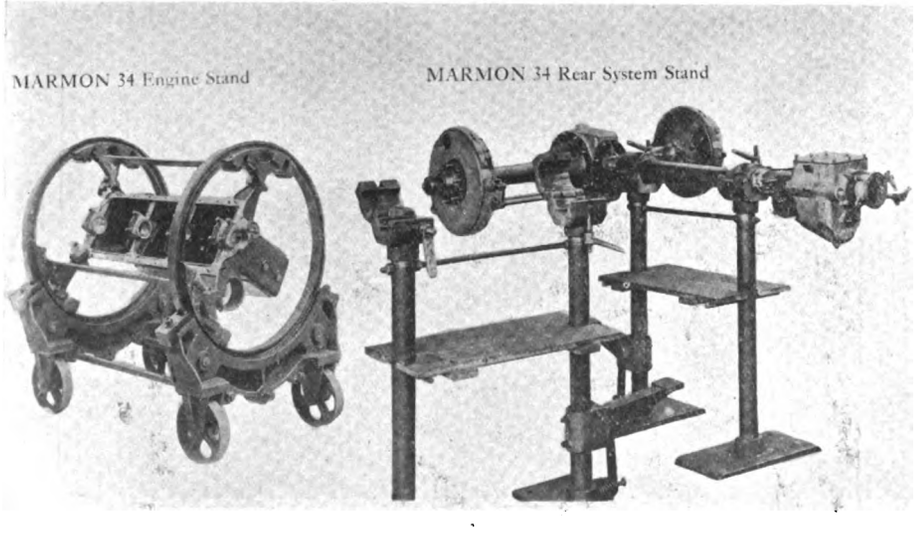
The garage man must make his living out of his business. In the vast majority of cases he has no other source of income. If the public refuses to pay a fair profit on certain parts of that business, then the other parts or departments must be made to make good the loss, or, the business must be conducted without a profit.

If the last be the alternative, then the public can reasonably expect to receive service that is unsatisfactory, because it will be rendered by dissatisfied men.

What I have said is not for the purpose of excusing the garage man. He is to blame if he does not get this business, for no one has a better opportunity to capture it.

Many of the garages do not maintain adequate stocks, some of them keep their premises in a dirty, ragged condition. Ordinarily you do not find a proper display. The goods are laid away in dark corners, kept under lock and key, the employees do not know the stock or the prices, and consequently the car owner goes where he will be supplied with just what he wants in the manner he desires to be supplied.

If these fellows I have in mind will clean up their garages, put in a complete line, not necessarily a big line, of materials and supplies, they can capture the accessory and supply trade of their customers, but they will never get it on any other terms. There are too many others who want it.



Two Devices Used in the Factory of the Nordyke & Marmon Company, Indianapolis, to Expedite Assembly of the Components of Marmon Cars.

MARMON EXPEDITES ASSEMBLY.

In order that parts of Marmon cars may be handled more readily during assembly, the Nordyke & Marmon Company, Indianapolis, has designed and adapted special engine and rear system stands.

The engine stand is constructed of gray iron castings in the Marmon shops and is mounted on four wheels for portability. In the process of manufacture of these motors the aluminum casting is bolted into the stand and the other parts are assembled so that the engine is complete when taken from it. The frame is constructed so that the motor can be turned in any direction.

The second illustration shows two of the rear system stands, one open and ready to receive the torque tube and the other with the rear system mounted and clamped in place. The device is light enough to be easily moved about the assembly room.

It is possible to completely assemble or disassemble a rear system on this stand. The arm extending from one of the uprights has a spring arrangement by which the side housing is placed against the centre piece of the rear axle when the other side housing is mounted above, so that all three pieces are in position for the through bolts.

CLIFTON HEADS N. A. C. C.

Charles Clifton of the Pierce-Arrow Motor Car Company was re-elected president of the National Automobile Chamber of Commerce at the annual meeting of the organization held recently in New York City. The directors elected were John N. Willys (Willys-Overland), C. C. Hanch (Studebaker), R. D. Chapin (Hudson), H. H. Rice (Waverley) and J. Walter Drake (Hupmobile).

In addition to the election of Mr. Clifton the following officers were chosen: Vice president, W. C. Leland (Cadillac); second vice presidents, Hugh Chalmers (Chalmers), gasoline division; W. T. White (White), commercial vehicle division; H. H. Rice (Waverley), electric vehicle division; secretary, R. D. Chapin (Hudson); treasurer, George Pope; general manager, Alfred Reeves.

Reports from the various committees indicated that the automobile and motor truck trade is enjoying the greatest prosperity of any period, with apparently no let up in the demand for American made motor cars in this country and abroad. Substantial gains in automobile shipments for the month of May were reported, the figures showing more than 24,000 carloads as against 15,392 in May last year.

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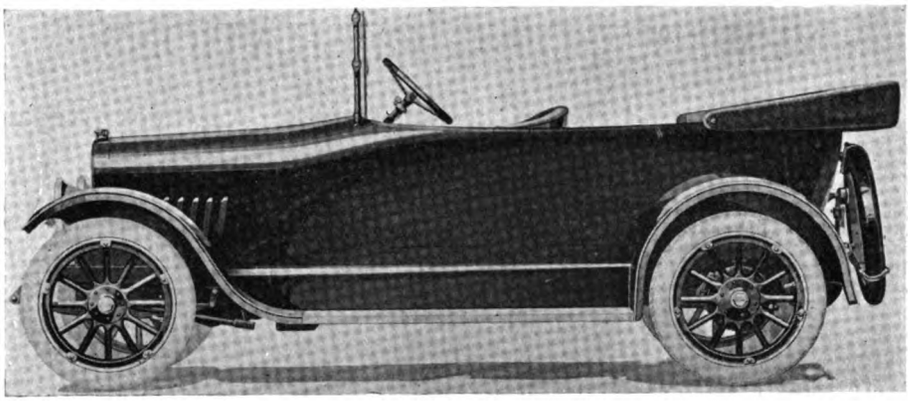
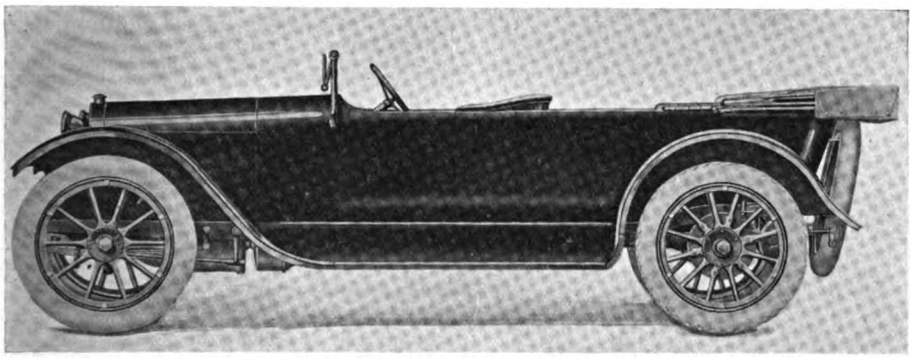
FIVE STRIKING MODELS RECENTLY ANNOUNCED.



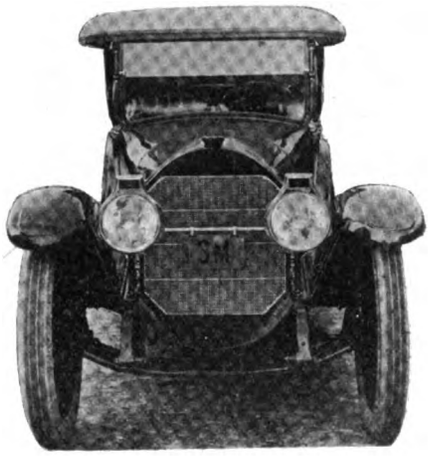
Regal 4 Thirty-Two, Price $695.

Regal Motor Car Company, Detroit.
Model, 4 Thirty-Two. Price, $695.
Motor, four-cylinder, L head.
Bore, 3½ inches; stroke, 4¾ inches.
Horsepower, 32.
Lubrication, circulation splash.
Carburetor, float feed, friction retained.
Clutch, leather faced cone.
Rear axle, three-quarter floating.
Wheelbase, 108 inches. Passengers, five.
Complete Description in The Automobile Journal, June 10, 1916.

Elkhart Carriage and Motor Car Company, Elkhart, Ind.
Model, A. Price, $795.
Motor, four-cylinder, L head
Bore, 3½ inches; stroke, five inches.
Horsepower, 34.7 at 1800 r. p. m.
Lubrication, splash pressure.



Elcar Model A, Price $795.

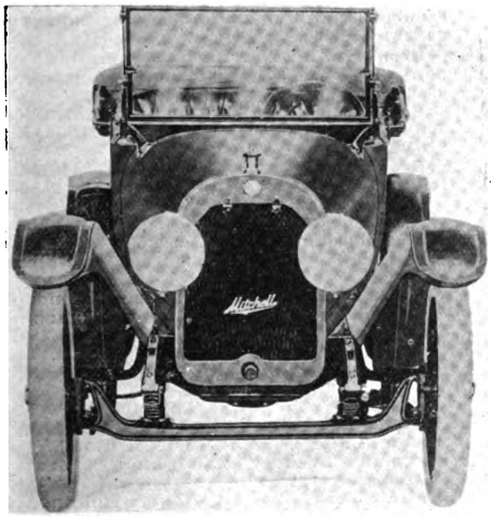


Locomobile R-7 38, Price $4600.

Carburetor, Carter.
Clutch, leather faced cone.
Rear axle, floating.
Tire sizes, 32 by 3½ inches.
Wheelbase, 114 inches
Complete Description in The Automobile Journal, June 10, 1916.

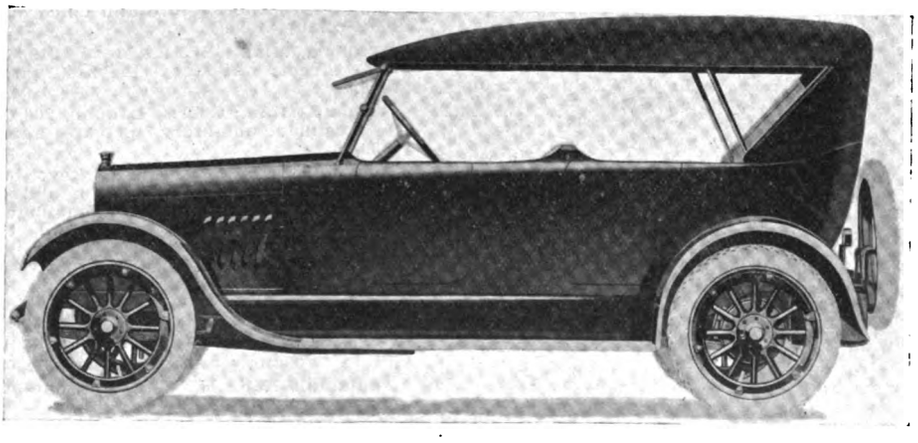
Locomobile Company of America, Bridgeport, Conn.
Model, R-7 38. Price, $4600.
Motor, six-cylinder, pairs.
Bore, 4¼ in.; stroke, five in.
Horsepower (actual), 65.
Lubrication, low pressure circulation.
Carburetor, Locomobile double jet.
Clutch, multiple dry disc.
Rear axle, full floating.
Tire sizes, 36x4½ front, 37x5 rear.
Wheelbase, 139 inches.
Complete Description in The Automobile Journal, May 25, 1916.

Columbia Motors Company, Detroit.
Model, Columbia Six. Price, about $900.
Motor, six-cylinder, L head.
Bore, three inches; stroke, 4¾ inches.
Horsepower, S. A. E. rating, 21.6.
Lubrication, splash pressure.
Clutch, multiple dry disc.
Tire sizes, 32 by 3½ inches.
Wheelbase, 115 inches. Passengers, five.
Description in The Automobile Journal, May 25, 1916.



Mitchell Improved Six of '16, Price $1325.

Mitchell-Lewis Motor Company, Racine, Wis.
Model, Improved "Six of '16. Price, $1325.
Motor, six-cylinder, L head.
Bore, 3½ inches; stroke, five inches.
Horsepower, S. A. E. rating, 29.40.
Lubrication, splash pressure.
Carburetor, Rayfield.
Clutch, cone.
Complete Description in The Automobile Journal, May 10, 1916.



Columbia Six, Priced at About $900.

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NEW BUILDING OPERATIONS.

Contracts Made and Plans Contemplated for Garages, Repair Shops and Service Stations.

In this department is presented a record from the various states of the plans and specifications in course of preparation by individuals and concerns, of the contracts awarded for the erection of new garages and the like, of additions, improvements and alterations either already made or under consideration, and of the business removals and new locations that have taken place within the past month.

Plans and Specifications.

Fort Smith, Ark.; A. L. Hindrick; one-story garage, 140x70; $7000.

Little Rock, Ark.; Matt Bush & Brothers, 1903 Wolfe street; brick and concrete garage, 50x140; $10,000.

Bridgeport, Conn.; Home Brewing Company, 266 Hallam street; one-story garage, 40x112.

New Haven, Conn.; Morris Tucker, 42 Church street; two-story garage, 22x48.

Waterbury, Conn.; C. S. Bull, 151 Hillside avenue; one-story garage, 25x25; $2000.

Waterbury, Conn.; S. J. March, 104 Chestnut street; one-story garage, 15x20; $1000.

Wilmington, Del.; Frederick A. Wardenburg, 1311 Gilpin avenue; two-story garage, 21x23.

Washington, D. C.; Isaac T. Mann; three-story automobile sales room, 61x105x104.

Washington, D. C.; James M. Peak, 612 L street, N. W.; one-story garage, 27x74; $3000.

Washington, D. C.; Harper Overland Company, 1128-30 Connecticut avenue; three-story garage, 60x200; $50,000.

Savannah, Ga.; F. Christopher Kramer; one-story steel and reinforced concrete automobile building, 20x150; will manufacture commercial automobile bodies, wheels and tops; daily capacity, 600 wheels; wheels from 24 to 28 inches.

Chicago, Ill.; William F. Pagels, 19 South La Salle street; one-story garage, 60x120.

Chicago, Ill.; Ford Motor Company, Detroit, Mich.; four-story service station, 75x125; $70,000.

Chicago, Ill.; Austin Motor Company, 4710 West Madison street; one-story automobile sales room, 125x73; $10,000.

Chicago, Ill.; Kocher & McClellan, 806 West 79th street; one-story garage, 20x30; $2000.

Chicago, Ill.; H. P. Kroencke, 3238 Beach avenue; one-story garage, $12,000.

Chicago, Ill.; Joseph Kotrba, corner 18th street and Laflin avenue; one-story garage, 24x100; $3800.

Chicago, Ill.; Anheuser-Busch Brewing Company; one-story garage, $10,000.

Chicago, Ill.; Kacher & McClellan, 806 West 79th street; one-story public garage, 50x125; $12,000.

Chicago, Ill.; Dr. Everett B. Williams, 4039 Greenview avenue; one-story garage, 23x42.

Hubbard Woods, Ill.; Harold L. Ickes, Winnetka, Ill.; 1½-story garage, 48x43, including chauffeur's quarters; $10,000.

Oak Park, Ill.; Marcus Dyer; one-story automobile sales room, 50x143; $9000.

Fort Wayne, Ind.; J. W. Suelzer; one-story garage, 66x150; $13,000.

Gary, Ind.; A. Benson, 1236 Rutledge street; one-story garage, 18.6x152; $1000.

Battle Creek, Ia.; Battle Creek Building Association; one-story garage, 57.6x100; $6000.

Des Moines, Ia.; L. Chamberlain; one-story garage, 49x130; $4000.

Des Moines, Ia.; F. W. Hubbell; one-story garage, 53x120.

Shenandoah, Ia.; D. S. and Ralph Lake; one-story garage, 75x120; $8000.

Waterloo, Ia.; Waterloo Warehouse Company; two-story garage, 80x100.

Pittsburg, Kan.; Frederick H. Fitch, 1012 Baltimore avenue, Kansas City, Mo.; one-story garage, 75x170; $20,000.

Baltimore, Md.; Robert L. Harris, 2027 Kennedy avenue; one-story garage, 17x23; $5000.

Baltimore, Md.; W. W. Kemp, 405 East Oliver street; two-story brick garage, 50.6x69.10; to be erected at 1418-22 Belvidere avenue.

Baltimore, Md.; Autocar Company, Ardmore, Penn.; four-story service shop, 60x100; total floor space of about 24,000 square feet, faced with brick, show rooms first floor, provide space for storing about 40 cars.

Brooklyn, Md.; James H. Fowler, first street and Potomac avenue; brick garage, 150x40; at corner Patapsco and Prospect avenues.

Boston, Mass.; George H. Hennessey; three-story garage, 100x100; $50,000.

Boston, Mass.; John Varnerin & Sons, 321 Norfolk avenue; two-story garage, 100x100; $25,000.

Boston, Mass.; L. T. Walsh; one-story garage, 45x125; $40,000.

Boston, Mass.; Albert Geiger, Jr., 87 Milk street; three-story service and sales building, $200,000.

Boston, Mass.; Hyman Cohen, 10 Wall street; one-story garage, 40x30; $5000.

Brighton, Mass.; W. V. Sherman, 16 Algonquin street; one-story garage; $5000.

Brookline, Mass.; Martin Flynn, 37 St. Paul street; one-story garage, 75x145; $25,000.

Everett, Mass.; New England Gas and Coke Company; one-story garage, 12x51.

New Bedford, Mass.; Harry Bloomingdale, 962 Purchase street; one-story garage, 81x108; $10,000.

New Bedford, Mass.; L. E. Destremps, 251 Union street; one-story garage, 81x106; $15,000.

New Bedford, Mass.; Joseph H. Tredette, 71 Chancery street; one-story garage, 52x99; $8000.

Springfield, Mass.; Walter and Charles Adams, 778 Chestnut street; one-story garage, 22x110; $5000.

Worcester, Mass.; David Shapiro, 122 Green street; one-story garage, 61x136; $20,000.

Birmingham, Mich.; Boughner Brothers; one-story garage, 35x107x85.

Detroit, Mich.; W. Ackerman, 1321 Mack avenue; one-story garage, 32x64; $3500.

Flint, Mich.; Frederick Swan, 423 First street; one-story private garage, 46.10x47; $3000.

Hastings, Minn.; H. W. Wilson; two-story commercial garage, 72x100.

St. Paul, Minn.; A. H. Wheeler, Globe building; one-story garage, 65x170.

Waseca, Minn.; E. W. Lewer; two-story commercial garage, store and office building, 50x130; $10,000.

Winona, Minn.; D. R. Mead, 219 Wabasha street; one-story private garage, $1000.

Winona, Minn.; George Landon, 266 Centre avenue; one-story private garage, $400.

Meridian, Miss.; D. A. Harkey; brick garage, $30,000; M. B. Herndon and Gillespie Montgomery appointed managers.

Caruthersville, Mo.; J. S. Wahl, two-story private garage, 20x27; $1500.

Hannibal, Mo.; T. H. Anderson, 316½ Broadway; two-story garage, 80x65; $15,000.

St. Louis, Mo.; Kardell Motor Car Company, H. W. Kardell, president, 4150 Oliver street; two-story garage, 80x130; $10,000.

Indianola, Neb.; H. W. Keyes; one-story garage, 20x22; $800.

Omaha, Neb.; Blackstone Holding Company, Bee building; one-story garage, 100x132; $25,000.

Omaha, Neb.; Bankers' Realty and Investment Company; two-story garage; $30,000.

Atlantic City, N. J.; A. H. Generotsky, 111 South Bartram place; two-story garage, 50x147.

East Orange, N. J.; George F. King, 837 Broad street; Newark, N. J.; one-story and two-story garage and apartment building, 100x225; $20,000.

Jersey City, N. J.; Edward Erickson, 117 Oak street; one-story public garage, $10,000.

Jersey City, N. J.; H. W. Sturckey, corner Claremont and Jackson avenues; one-story garage, 26x108; $4000.

Jersey City, N. J.; John Kiebeley, 149 Woodlawn avenue; one-story public garage, 50x112.

Jersey City, N. J.; Public Auto Service Company, 58 South Paul avenue; one-story garage, 50x136; $10,000.

Morristown, N. J.; George P. Schmidt, 2½-story garage, 25x26; $3000.

Newark, N. J.; Henry Grobert, 280 Amherst street, East Orange, N. J.; one-story garage and show room, 60x152, $12,000; lessee, W. C. D. Motor Car Company, 299 Central avenue, Newark, N. J.

Newark, N. J.; Aetna Realty Company, 738 Broad street; one-story garage, 59x148; $12,000; lessee, C. T. Silver Motor Company, 738 Broad street.

Passaic, N. J.; W. Miller, 77 Second street; one-story public garage, 25x75; $4500.

South River, N. J.; James B. Alfred; one-story garage, 56x106; $5000.

Trenton, N. J.; Steel & Skirm, one-story garage, 150x101; $14,000.

Albany, N. Y.; George Ahlheim, 815 Park avenue; two-story garage, 25x30; $5000.

Albany, N. Y.; D. B. Wade, 64 South Manning building; one-story garage, 20x28; $1000.

Albany, N. Y.; A. Marinello, 423 Delaware avenue; one-story garage, 20x24; $1000.

Albany, N. Y.; Michael Walsh, 475 Bradford street; one-story garage, 26x20; $1500.

Albany, N. Y.; James E. Glavin, West Albany, N. Y.; two-story garage, 21x75; $2000.

Brooklyn, N. Y.; Marmer Holding Corporation, 189 Montague street; one-story garage, 100x100; $15,000.

Brooklyn, N. Y.; Benjamin Stephens, 39 Stephens court; one and two-story garage, 22x99; $10,000.

Brooklyn, N. Y.; Bush Terminal Company, 100 Broad street; one-story garage, 60x161; $15,000.

Brooklyn, N. Y.; Arthur Constant, 7416 Third avenue; one-story garage, 80x159; $10,000.

Brooklyn, N. Y.; P. McTierman, 241 Rutland road; one-story garage, 84x51; $8000.

Brooklyn, N. Y.; Sheepshead Bay Speedway Association, 1604 Broadway, New York; one-story garage, 26x50; $4000.

Brooklyn, N. Y.; M. Morris, two-story garage, 85x149; $15,000.

Brooklyn, N. Y.; P. E. Cleary, Concord and Navy streets; one-story garage, 54x113; $5000.

Brooklyn, N. Y.; John Van Rault, 309 Fifth avenue; one-story garage, 38x95; $10,000.

Buffalo, N. Y.; Clyde H. Lanclot, 700 Ellicott square; one-story garage, 20x20.

New York, N. Y.; Euell & Euell, 125 Sherman avenue; three-story garage, 50x100.

New York, N. Y.; Henry Holding, 5 Beekman street; three-story garage, 25x95; $20,000.

New York, N. Y.; Dr. James Bishop; two-story garage; $20,000.

New York, N. Y.; J. White, 202 Franklin street; four-story garage, 50x57; $22,000.

New York, N. Y.; R. Veitch, 242 Dykman street; one-story garage, 25x100; $8000.

New York, N. Y.; Concourse Improvement Company, 369 East 167th street; one-story garage, 100x166; $20,000.

Niagara Falls, N. Y.; Carborundum Company, corner Buffalo avenue and 18th street; one-story garage, 150x20.

Richmond Hill, L. I., N. Y.; Terence Rogers; one-story garage, 30x80; $4000.

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THEY are guaranteed against punctures and blow-outs for 5000 miles. You can recommend them as absolutely the best tires that can be obtained at any price.

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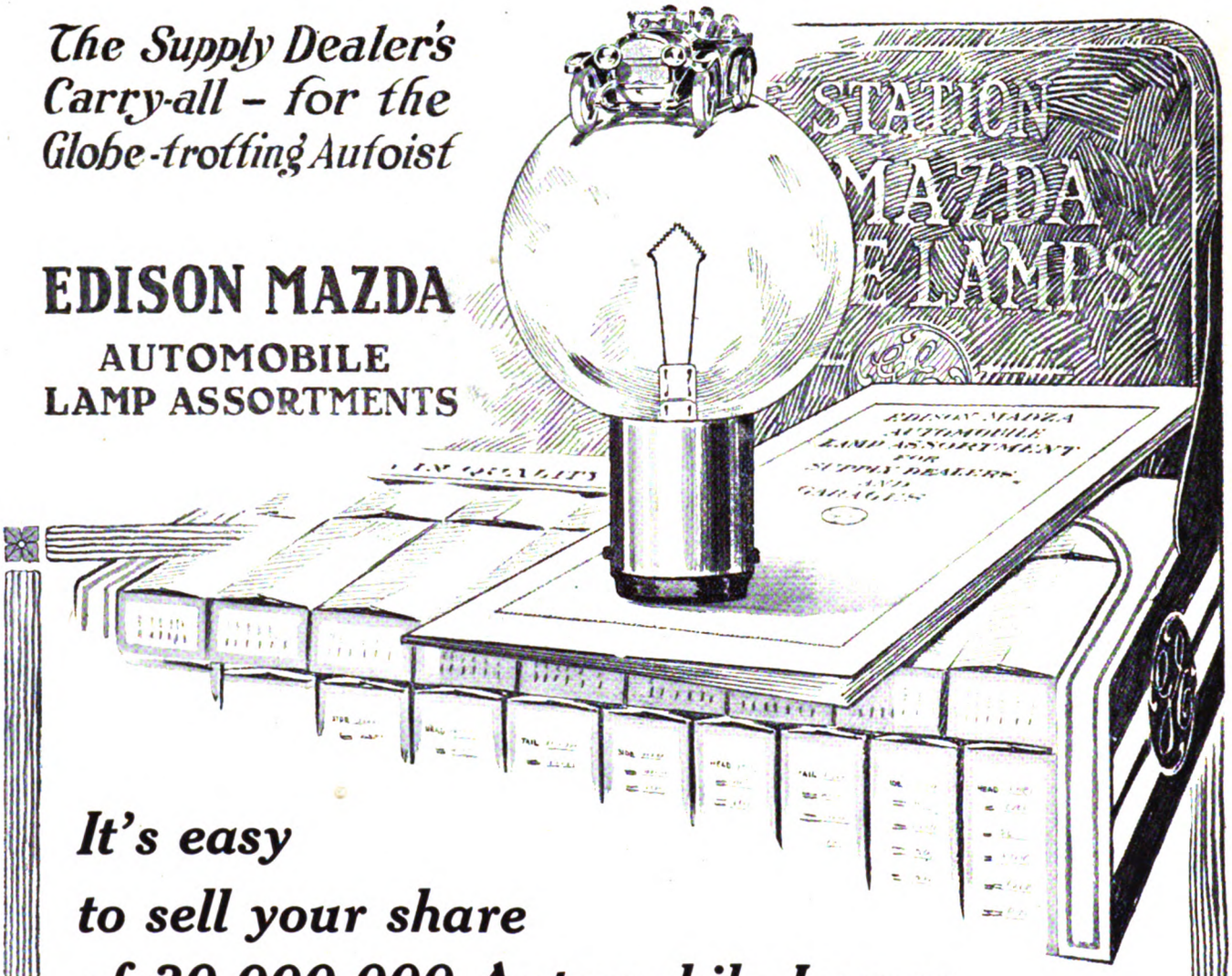

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CAR owners this year will buy thirty million automobile lamps. You want a part of this business. You can get it, too, because our Auto Lamp Assortment makes it easy for you to supply exactly the right lamps to 90% of all the cars that come to your door.

Moreover, this compact little stock of less than 200 lamps takes up very little room. It is so conveniently arranged that, with the aid of our booklet, your clerk can instantly pick out the right lamp for any car.

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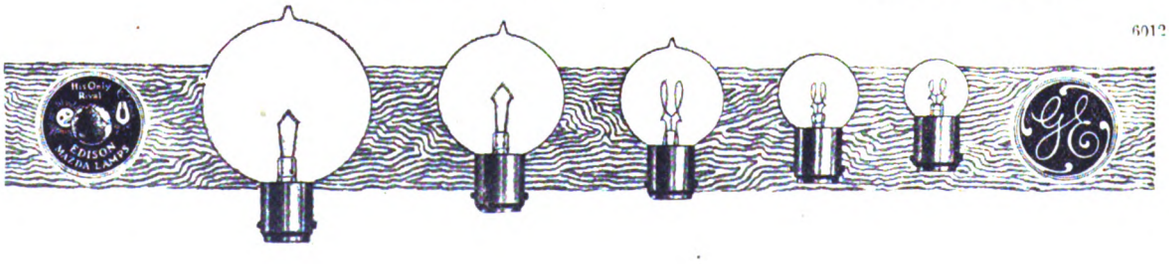

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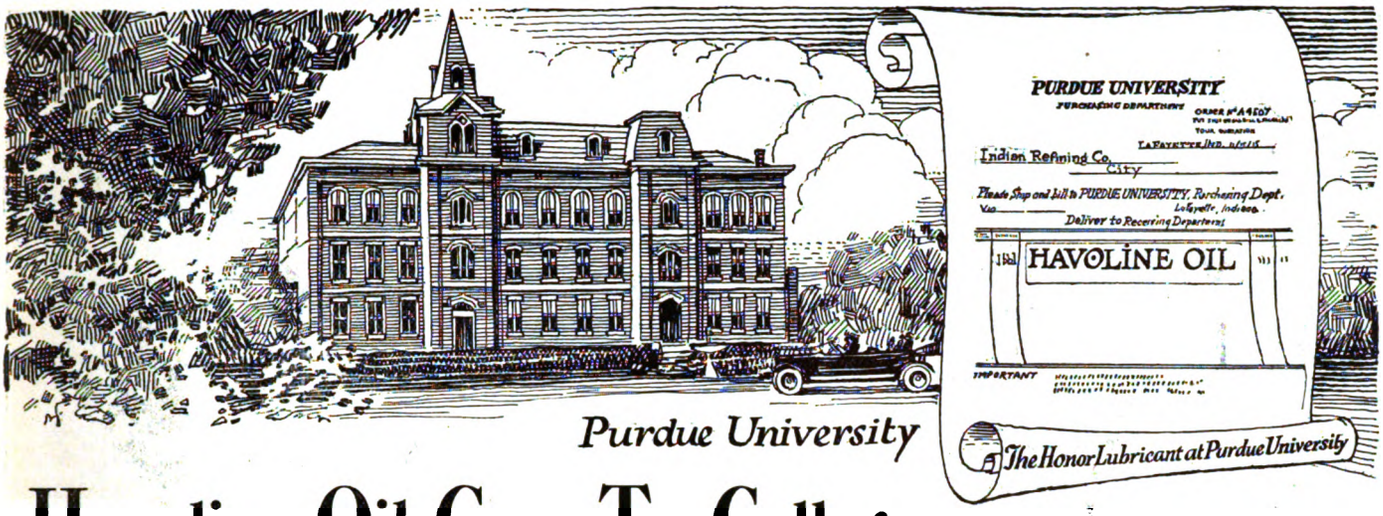

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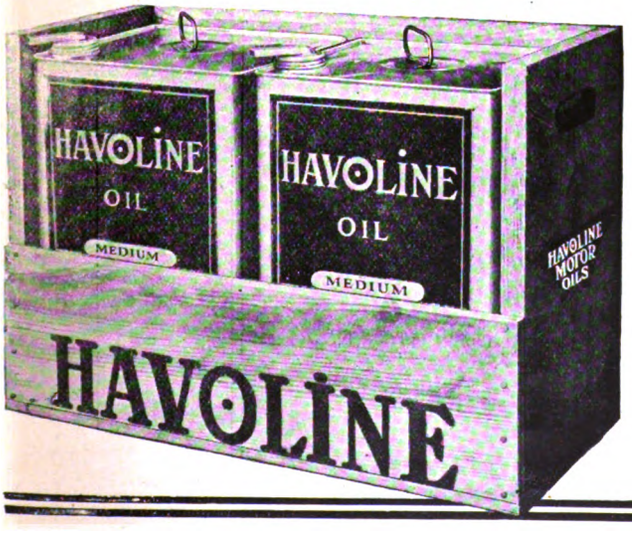

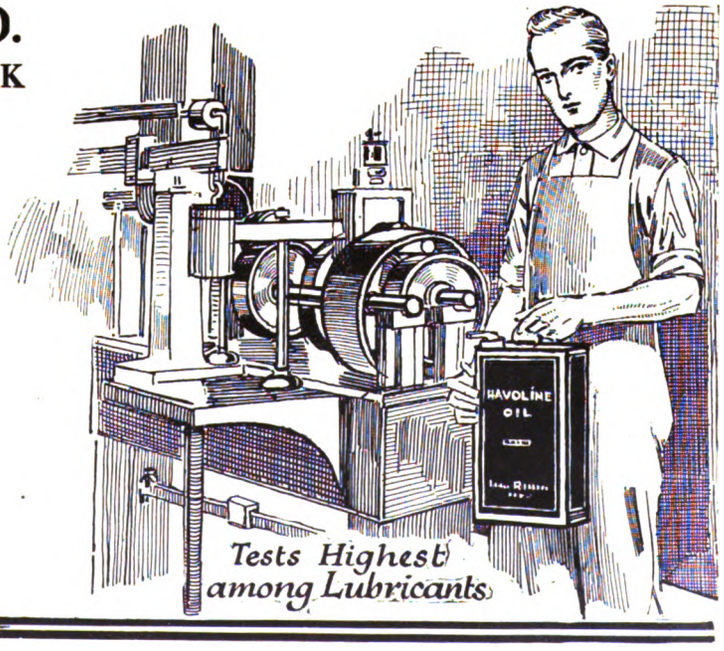

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BRUGAN ECONOMY VALVE $4.00

It is a simple, well-made little air valve that is installed in the intake pipe close to the carburetor. By automatically admitting air, it thoroughly vaporizes the gasoline, giving a lean, powerful mixture, that increases the motor power and cuts down the quantity of gasoline necessary for a given mileage. The improved combustion makes less carbon in the cylinders and the perfect mixture gives a brisk, sprightly motor with a vigorous response. It is adjustable—can be accurately suited to any car.

This valve will have competitors, but none that is made as well, advertised as well, or is so logically priced.

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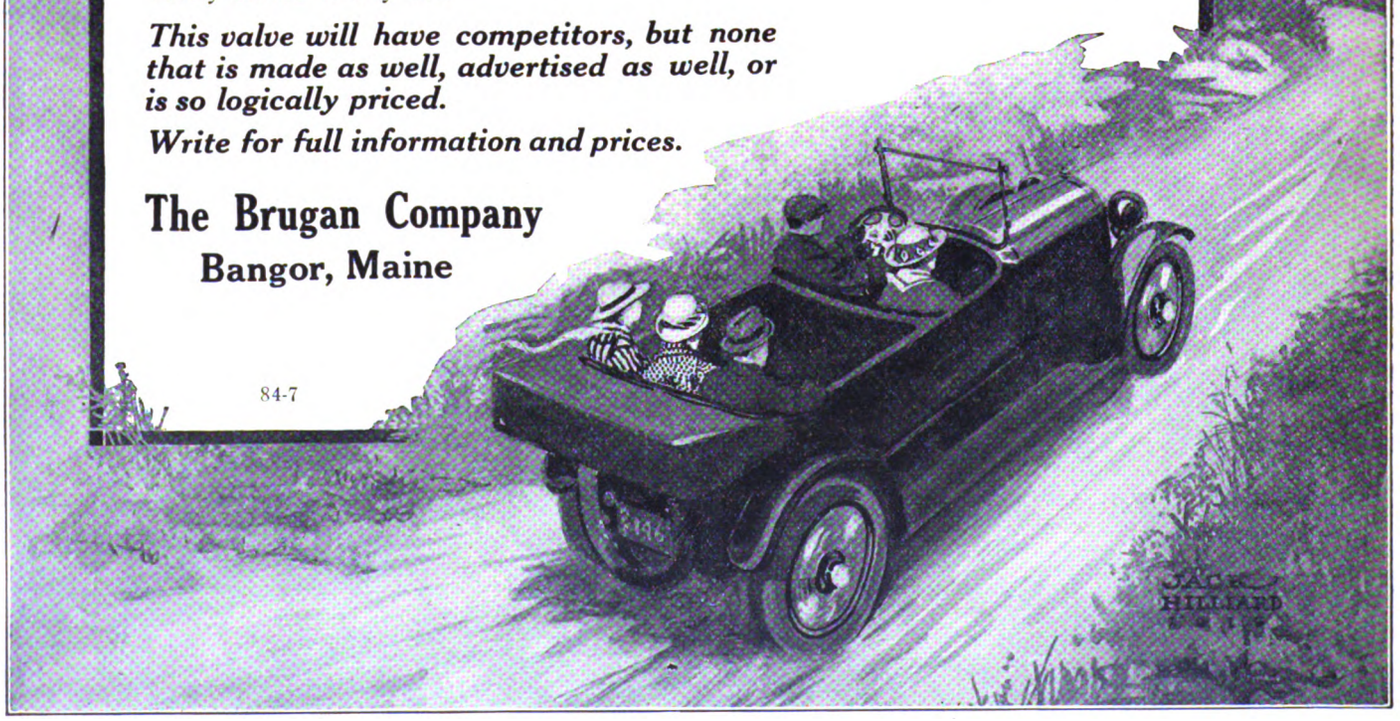

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Rochester, N. Y.; Germain Baking Company; one-story garage, 40x50; $3000.

Schenectady, N. Y.; William Fairlee, 17 Linden street; one-story garage, 32x100; $2200.

Suffern, N. Y.; Henry P. McKenney; one-story garage, 39x70.

Syracuse, N. Y.; Genesee Motor Company; E. H. Morris, president, 430 South Warren street; two-story garage and automobile sales room, 50x225; $40,000.

Syracuse, N. Y.; Syracuse Motor Car Company; David Grody, president, 235 West Genesee street; three-story public garage, 75x190; $40,000.

Yonkers, N. Y.; Ernest Pape, 18 Sunnyside drive; two-story garage, 24x34; $5000.

Greenville, N. C.; A. J. Lang; one-story brick garage, 64x107; asbestos roof, concrete floors; $4500.

Winston, N. C.; Forsyth Motor Company; two-story garage and repair shop, 94x49.

Akron, O.; Summit Auto Garage Company, 697 South Main street; two-story garage, 76x250; $30,000.

Ashland, O.; Merritt Larabee and Elmer Dole; one-story public garage, 60x100; $7000.

Cincinnati, O.; Corry Garage Company, 707 Mercantile Library building; two-story public garage, 44x90; $10,000.

Cleveland, O.; N. Loeser; one-story garage, 15x20.

Cleveland, O.; Country Club; one-story garage, 47x300; $12,000.

Cleveland, O.; A. Tonzola, corner Superior and Lake View avenues; one-story private garage, 18x59.

Cleveland, O.; Grant Motor Car Company; one and two-story garage and sales room, 181x561.

Tulsa, Okla.; H. C. Stahl and M. A. Younkman; one-story garage, 100x140; $15,000.

Portland, Ore.; R. L. Gilson; three-story garage, 100x100.

Edgeworth, Penn.; C. P. Byrenes, Farmers' Bank building, Pittsburg, Penn.; 1½-story garage, 24x34.

Lansford, Penn.; Thomas Prichett; two-story garage, 18x50; $1500.

Olyphant, Penn.; John Jordan; two-story garage, 30x40; $10,000.

Philadelphia, Penn.; H. C. Twistenan; one-story garage, 24x30; $2500.

Reading, Penn.; William L. Danbert, 321 Rise street; one-story garage, 14x16.

Reading, Penn.; George E. Wentxel, rear 307 Washington street; one-story garage, 14x16.

Reading, Penn.; Daniel M. Duke, 418 Mulberry street; one-story garage, 13x17.

Reading, Penn.; A. R. Lord, rear 526 South Fifth street; one-story garage, 16x18.

Reading, Penn.; W. C. Detweiler, 747 North Ninth street; one-story garage, 14x16.

Reading, Penn.; A. Alsberger, 700 Penn street; one-story garage, 12x16.

Ridley Park, Penn.; J. E. Brandt, 412 Swarthmore avenue; one-story garage, 20x14.

Warren, Penn.; Rossell Brothers; three-story garage, 50x120; $25,000.

Whitemarsh, Penn.; Dr. Edward B. Krumbhaar, Chestnut Hill, Penn.; one-story garage, 39x24.

Bamberg, S. C.; Bamberg Automobile Company, automobile building, 34x100; install repair equipment, deal in Overland cars, accessories; $35,000 to $40,000.

Memphis, Tenn.; 638 Tire and Vulcanizing Company; two-story automobile building; 50x100; fireproof, pressed brick and terra cotta exterior, $25,000.

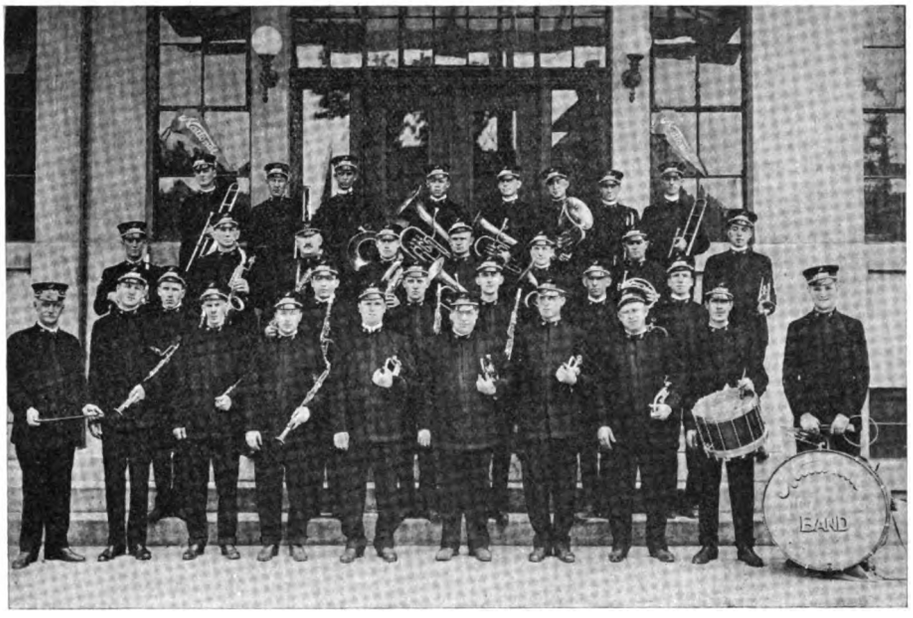
Memphis, Tenn.; Memphis Motor Car Company; automobile display room, storage station for stock cars, service station and parts supply department, 100x106; brick and terra cotta; $35,000.

Abilene, Tex.; J. M. Radford; garage and automobile sales room, 50x240; face, brick exterior, cut stone trimmings, metal windows and doors, 125 foot plate glass front, electric lighting.

Sherman, Tex.; Lee Simmons; brick, steel and concrete garage, 92x150; tar and gravel roof, concrete floor.

Norfolk, Va.; W. W. and Howard Shield; brick garage; $3000.

Richmond, Va.; Murphy's Hotel; two-story brick, steel and concrete garage; $20,000.



An Attraction at the Indianapolis Race Was the National Motor Vehicle Company's Band, Shown in Illustration, Which Is Made up Entirely of Factory Employees.

Richmond, Va.; Barney E. Myers; two-story brick garage and automobile sales room; $10,000.

Richmond, Va.; John J. Ballou; brick garage in rear 2712 Monument avenue; $5500.

Milwaukee, Wis.; Richard Mokras, 526 Belleview place; one-story garage, 70x160; $2500.

Milwaukee, Wis; Oliver Webb, 721 Third street; one-story garage, 28x70.

Milwaukee, Wis.; Byron S. Scheiderer, Majestic building; one-story garage, 20x30; $2000.

La Crosse, Wis.; Wallace Montague; two-story garage, 120x150; $50,000; lessee, Overland Motor Car Company.

Oconomowoc, Wis.; H. A. Ernst; two-story garage, 74x99.

Waukesha, Wis.; C. F. Cork, 120 Broadway; one-story garage, 50x120; $6000.

Contracts Awarded for New Buildings.

Montgomery, Ala.; J. O. Estes; one-story garage, 50x160; for Weaver Henderson Auto Company.

New London, Conn.; Manwaring Memorial Hospital Trustees, 163 Garfield avenue; one-story garage, 20x100; $10,000.

Hartford, Conn.; E. Duncan, 10 Elm street; one-story garage, 44x56; for Jones Garage Company, 312 Capen street; $5000.

Hartford, Conn.; J. H. Grozier Company, 721 Main street; one-story garage, 22x55; for Jacobs Manufacturing Company; $4000.

Waterbury, Conn.; George A. Upham, 14 Sperry street; one-story garage, 22x44; for H. B. Sanderson, 34 Mitchell avenue; $3000.

Washington, D. C.; Davis Construction Company, Union Trust building; one-story garage, 30x25; for Joseph Gowler; $3500.

Fort Meade, Fla.; W. C. Robertson; one-story garage, 50x100; for Main Street Garage, Bartow, Fla.

Chicago, Ill.; L. Snow; one-story garage, 62x200; $14,000.

Chicago, Ill.; Fred Mraz, 1301 South 43rd street; one-story garage, 24x28; for A. Roser; $1000.

Galva, Ia.; J. F. Leifers Company, Cedar Rapids, Ia.; one-story garage, for Galva Auto Company; $5000.

Kansas City, Kan.; E. Dreier & Son, 949 Armstrong avenue; one-story garage, 20x24; for F. Winkler, 638 Minnesota avenue; $500.

Baltimore, Md.; Consolidated Engineering Company, 245 Calvert building; one-story garage and pump house, for William C. Robinson & Sons Company, corner south and Water streets $10,000.

Baltimore, Md.; Patrick J. Cushen, 218 St. Paul street; one-story garage, for S. Leibowitz; $10,000.

Brooklyn, Md.; James Ore, 7th street and Potomac avenue; concrete and galvanized garage and repair shop, 32x50; for William Smith.

Brockton, Mass.; David Irving, 31 Hight street; one-story garage, 30x50; for George B. White, 11 Karl place.

Lynn, Mass.; J. T. Wilson & Son, Inc.; Nahant, Mass.; two-story garage, 27x37, for George R. Beardsell; $7500.

New Bedford, Mass.; John Sykes, 19 Collins street; one-story garage, 66x112; for Mrs. Ida Marcotte, 358 Orchard street; $8000.

New Bedford, Mass.; C. L. Faunce, 138 North Second street; one-story garage, 23x30, for Edward S. Brown, 405 County street; $4000.

New Bedford, Mass.; T. B. Davis Corporation, 3 Pope street; one-story garage, 34x63, for Morse Twist Drill Company.

Northampton, Mass.; Edward J. Pinney, Springfield, Mass.; one-story garage, 76x156, for Russell C. Parsons, 340 Bridge street, Springfield, Mass.; $30,000.

Detroit, Mich.; M. Funke, 140 Erskine street; one-story garage, 30x22; $5000.

Detroit, Mich.; American Express Company, 23 West Monroe street, Chicago; one-story garage, 137x210; $55,000.

Bayonne, N. J.; Herman Ahlfeld, 34 West 26th street; one-story garage, 65x75, for Alfred Stahler, 549-51 Broadway; $5000.

Jersey City, N. J.; Peter Redgern & Son, 571 Jackson avenue; one-story garage, 21x212, for M. H. Lanning, 266 Fairmount avenue; $3500.

Montclair, N. J.; H. C. Dunn; one-story garage, 25x25; $2500.

Passaic, N. J.; Albert Martin, Sr.; one-story garage, 52x90; $5000.

Buffalo, N. Y.; George L. Moore, 22 Anderson place; one-story garage, 14x16, for M. E. Ryan, 550 Wyoming avenue.

Rochester, N. Y.; A. Frederich & Sons Company, 710 Lake avenue; one-story garage, 35x33, for Walter S. Hubbell, 1209 East avenue; $3500.

Westhampton Beach, L. I., N. Y.; William C. Atwater, 1 Broadway, New York; 2½-story garage, 38x60; $900.

Yonkers, N. Y.; Niniau Jamieson. Inc., care American Real Estate, Inc., Parksville, N. Y.; one-story garage, 50x100, for Edna B. Lewis, 117 Bedford street; $7000.

Akron, O.; D. H. Boyer Company, 203 Ohio building; two-story garage, 20x24, for H. B. Dodge, 730 West Market street; $3000.

Cincinnati, O.; J. H. Brockmann & Son, 1608 Logan street; 2½-story garage, 23x47, for William A. Windisch, 210 Glenway avenue; $4500.

Cincinnati, O.; Moore Oil Company, H. C.

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Mather, president; C. E. Mather, secretary and treasurer; corner York and McLean avenues; auto filling station, 26x27; $7000.

Cleveland, O.; Walther Engineering and Construction Company, 1914 East 66th street; one and two-story garage, sales room and office building, 181x561, for Grant Motor Car Company; $200,000.

Curwensville, Penn.; O. J. Baker; two-story garage, 50x100, for John Ardary and Boyd Crisman; $4000.

Easton, Penn.; George Lutz, 730 Spring Garden street; one-story garage, 35x60, for W. F. Dwyer, 633 Walnut street; $3000.

Harrisburg, Penn.; H. A. Hipple, 1850 North street; two-story garage, 117x100, for Dr. Charles C. Cocklin; $20,000.

Philadelphia, Penn.; J. F. Trent; brick garage, 16x30; at 2041 Master street; $500.

Philadelphia, Penn.; Warren Moore & Co.; one-story frame and galvanized iron garage, 47.8x18; east side Tacony street, south of Orthodox street, for Miller Lock Company; $700.

Philadelphia, Penn.; W. Percival Johnson; stone and brick garage, 12x20, at 920 Wynnewood road; $550.

Philadelphia, Penn.; John Bateman; one-story brick garage, 17.10x35.8, at 5521 Boyer street; $750.

Philadelphia, Penn.; Joseph A. Wolf; one-story brick garage, 100x46.5, at 2413-17 East Huntingdon street, for D. Calahan; $2600.

Philadelphia, Penn.; Arthur Gallagher; one-story brick garage, 16.2x58.4; northeast corner Holly and Brown streets, for A. F. Winkle; $700.

Philadelphia, Penn.; Ketcham & McQuade; one-story brick and stone garage, 11.6x18.6, at 6125 Nassau street, for Judge Crane; $500.

Philadelphia, Penn.; N. M. Bean; stone garage, 14x25, at 4600 Stenton avenue; $700.

Philadelphia, Penn.; Warren E. Biscoe; one-story brick garage, 50x68, at 4527 Lancaster avenue, for John Bradley; $3800.

Philadelphia, Penn.; William R. Dougherty; one-story brick garage, 38.4x54, at 2709-13 Wharton street, for Charles E. Rosseberg; $3800.

Philadelphia, Penn.; F. T. Mercer Company; one-story brick garage, 16.6x18, north side Haddington street, west of 62nd street, for William A. Perks; $700.

Philadelphia, Penn.; Isaac Vankirk; two-story stone garage, 54x146, at southwest corner Cheltin and Pulaski avenues, for John W. De Long; $20,000.

Philadelphia, Penn.; Frank Nardy; brick garage, 56x113, at 3438-44 Ludlow street; $7500.

Philadelphia, Penn.; C. B. Maguire; brick and concrete garage, 12x18, at 5132 North Mervine street, for Edwin A. Newton; $800.

Philadelphia, Penn.; Rush Brothers; brick garage, 19.8x43, south side Harrison street, west of Frankford avenue, for MacMurtrie and Wiedenmuller; $1800.

Philadelphia, Penn.; J. T. Trent; brick garage, 26x40, at southeast corner 19th and Addison streets, for Knights of Pythias; $800.

Philadelphia, Penn.; Charles Schoppe; one-story brick garage, 34x97.6, at 2942-44 East street, for James Kane; $3700.

Philadelphia, Penn.; William Lotz; one-story garage, 80x94, at 4058-62 Powelton avenue; $3500.

Pittsburg, Penn.; J. H. Benscoter, Perrysville, Penn.; one-story garage, 47x48, for A. C. Wood, 4519 Filmore street; $1800.

Reading, Penn.; William D. Wilkinson; one-story garage, 12x16, at 214 Jefferson street.

Reading, Penn.; Daniel H. Hunter, 820 North 11th street; one-story garage, 10x16, for John Booser, 840 North Ninth street.

Reading, Penn.; Henry J. Randenbush, 1324 Perkiomen avenue; one-story garage, 19x28, for Harvey Kramer, 352 Greenwich street; $15,000.

Reading, Penn.; Charles H. Schlegel, 224 Perkiomen avenue; one-story garage, 65x120, for Robert Davis.

Wilkes-Barre, Penn.; Charles Stifter, corner North Penn and Vine streets; one-story garage, 49x95, for Michael Waterlock; $5000.

Danville, Va.; W. K. Anderson; one-story brick garage, 40x80, for R. A. James; $3000.

Danville, Va.; W. K. Anderson; two-story brick garage, 60x118, for L. A. Robinson; $6000.

Milwaukee, Wis.; Ranulf Company, Patton building; one-story garage, 20x75, for John Hunholz; $2000.

Milwaukee, Wis.; Frank Wood, 747 Shepard avenue; one-story garage, 24x24; $2000.

Milwaukee, Wis.; Barney Wilke, 1110 Island avenue; one-story garage, 70x96, for Builders' Investment Company; M. Tullgren, president, 133 Second street; $8000.

Turtle Lake, Wis.; Dood & Churchill, Osceola, Wis.; one-story garage, 50x124, for D. W. Riddler, Amery, Wis.; lessee, Turtle Lake Auto Company.

Alterations, Improvements and Additions.

Colorado Springs, Col.; Marksheffel Motor Company will build an addition to the garage.

Hartford, Conn.; The Ashwell Service Station, 341 Trumbull street, has completed a larger office and a rearrangement of the oil and fuel departments.

Mason, Ia.; Edward Colligan is building an addition to his garage.

Cedar Springs, Mich.; George E. Waycott plans to build an addition, 40 by 88 feet, to the Central Garage.

Scottville, Mich.; Hobe & Smith have greatly improved and enlarged their garage.

Tyler, Minn.; The Automobile Hospital is being enlarged.

West Union, Minn.; Paschke & Harth are enlarging their garage.

Moberly, Mo.; Rice & Bondurant are doubling their present floor space and providing another entrance.

Buffalo, N. Y.; The Jones Motor Sales, formerly the Jones Auto Exchange, has remodeled its sales room to give more room.

Trenton, N. J.; John L. Brock will build an addition to his large garage along Canal street.

Ashton, O.; Faust H. Boyd will erect a large addition to his garage.

Waukesha, Wis.; Fred M. Wadsworth and Harry Douglas are remodelling the Ryan building into a garage and service station. The concern represents the Briscoe.

Factories Garages and Repair Shops.

Little Rock, Ark.; R. E. Zuendt will open a new plant at 10th and Main streets for repairing automobiles.

Abingdon, Ill.; Harrison B. Coddington has purchased the Bowton lot on Main street and will erect a garage.

Graettinger, Ia.; The Graettinger Auto Company will build a new garage.

Ash Grove, Kan.; F. A. Gatewood will erect a new garage.

Moreland, Kan.; Hill & Goddard are erecting a fine garage. The building covers two lots and had 4800 square feet of brick floor space.

Boston, Mass.; The Bishop Motor Sales Company is preparing plans for a new building.

Great Barrington, Mass.; The Eastland Garage Company will erect a large garage.

Lynn, Mass.; Edgar D. Dennis will erect a garage on Commercial street.

Pittsfield, Mass.; George C. Leidheld will erect a new garage at a cost of $15,000 at 610 North street.

Southbridge, Mass.; Henry Dumas will build a garage on Chester street.

Quincy, Mass.; William and John Duggan are erecting a building to be known as the Neponset Bridge Garage.

Beulah, Mich.; W. L. Case will erect a new garage.

Detroit, Mich.; The Anderson Electric Car Company will erect a new four-story service and sales station, having a floor space of approximately 60,000 square feet, at Case avenue and Antoinette street.

East Jordan, Mich.; Roscoe Mackey is erecting a new garage, 50x106.

Utica, Mich.; Albert Kraft will open a garage.

Saginaw, Mich.; L. R. Gardner announces the opening of a new garage and repair shop.

Brownton, Minn.; Rickert & Kartnes will erect a garage.

Grygla, Minn.; A. O. Fladeland is erecting a garage, 35 by 55 feet.

Harris, Minn.; Fred Steinke is building a garage.

Kasota, Minn.; George Eastwood is building a concrete garage.

Kilkenny, Minn.; W. A. Sheridan & Sons will erect a garage.

Mahnomen, Minn.; C. W. Wright is building a garage.

Mankato, Minn.; W. G. Hoerr will erect a brick and tile garage, 56x66 feet.

Mayer, Minn.; Pretzel & Itter will build a garage 48 by 100 feet.

Middle River, Minn.; Rud & Dunrud has contracted for building a garage.

Minneapolis, Minn.; H. E. Mack & Co., 1229 Hennepin avenue, distributor of the Dodge Brothers cars, has moved to a new building at 1223 Harmon place.

Pelican Rapids, Minn.; Ole Maland will erect a cement garage 50 by 70 feet.

Waseca, Minn.; E. W. Lewer has begun the construction of a two-story garage, 54 by 130 feet.

Paterson, N. J.; Thomas Cappa will open a garage to be known as the Paterson Auto Service. The building is being remodelled.

Brooklyn, N. Y.; S. Levine, 334 Utica avenue, will erect a one-story garage on Eastern Parkway at a cost of $7500.

Gouveneur, N. Y.; Elmer C. Curtis is erecting a large garage on Mill street.

Beach, N. D.; Peter Palmer is building a garage 24 by 40 feet.

Fargo, N. D.; The Auburn Motor Car Company will erect an automobile display room on the lot north of the Pilgrim hotel.

Overly, N. D.; Harry Woodruff will open a garage.

Valley City, N. D.; Leahy & McGarry are building a garage and repair shop.

Canton, O.; Clifford and Theodore Williams, 28 East Locust street, will erect a large garage.

Texhoma, Okla.; J. C. Jennings has rented the Yates building on Main street and will conduct a garage and will be prepared to do all kinds of vulcanizing.

Pittsburg, Penn.; The Schusler-Ramsey Company is preparing to enter new and larger quarters.

Reading, Penn.; The J. Miller Kalbach Company will open a garage and service station at 312 Cherry street.

Providence, R. I.; James C. Doran & Sons have acquired the entire block bounded by Chestnut, Bassett, Ship and Elbow streets. A garage will be built on the site.

Memphis, Tenn.; The "638" Tire and Vulcanizing Company, now located at Monroe and Wellington streets, will erect a new building for a large service station at Union avenue and Dudley street.

Memphis, Tenn.; The Memphis Motor Car Company will erect a building at the southwest corner of Union avenue and Pauline street, to be used as a display room, storage station for stock cars, service station and parts and supply department.

Beaver Dam, Wis.; Robert Christian is erecting a two-story garage and repair shop 60 by 80 feet on Madison street. It will be reinforced concrete and brick.

Clintonville, Wis.; Potter Brothers are erecting a fireproof garage and repair shop, 36 by 80 feet, two stories and basement, with a wing 15 by 60 feet.

Florence, Wis.; A. W. Wismer is building a garage and service station. He has the agency for the Dort.

Ladysmith, Wis.; The Ryall Garage is now building a new addition to its garage. This is the second addition and will contain the boiler room, vulcanizing plant and power equipment.

Medina, Wis.; A. B. Van Alstine and C. Gallea, agents for the Saxon, are establishing a garage and service station and will specialize in repair work.

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NEWLY INCORPORATED CONCERNS.

Monthly Record of New Business Houses that Have Been Chartered in Various States.

This department is an important summary of the concerns which have received charters in the various states to conduct businesses that have direct relation with the motor vehicle industry. In each instance the amount of capitalization is given, when such information is available, the names of the individual incorporators and the nature of the business to be conducted.

Dealers In Automobile and Motor Trucks.

Dover, Del.; F. L. Hardesty & Sons Company; $30,000; to deal in automobiles.

Indianapolis, Ind.; The Coffin Motor Company; $10,000; to deal in automobiles; Albert R. Coffin, William H. Morrison, Jr., Raymond D. Brown.

Atlanta, Ga.; Uniform Compression Tube Company; $25,000; to handle automobiles, motorcycles and accessories; J. Mallory Hunt, A. L. Hunt.

Atlanta, Ga.; The Odell-One-Ton Truck Auto Company; $10,000.

Augusta, Ga.; The Bamberg Automobile Company; $3000; G. Frank Bamberg, president. secretary and treasurer, and Nellie M. Bamberg, vice president.

Indianapolis, Ind.; The W. R. Wheeler Company; $25,000; to buy and sell automobiles and accessories; W. R. Wheeler, Gilbert R. Harris, R. C. Shaneberger, L. R. Zapf, Ruby Y. Wheeler.

Boston, Mass.; Boston Manufacturing and Distributing Company; $150,000; to deal in automobiles; Fred O. Orr, George E. Nicholson, Roland B. Conway.

Springfield, Mass.; Arrow Company; $25,000; to deal in automobiles; Irving H. Page, Charles R. Culver, George A. MacDonald.

Springfield, Mass.; Dazzle Dimmer Company, Inc.; $10,000; to deal in motor vehicles and lamps; Dennis E. O'Neil, president and treasurer; H. R. Audet and E. B. Dixon.

Springfield, Mass.; P. W. Mynor Company; $25,000; to deal in automobiles; Phillip W. Mynor, Carl W. Merrick, Edward A. Francis.

Worcester, Mass.; Morgan & Corey, Inc.; $10,000; to deal in automobiles; James L. Morgan, Helen G. Rogers.

Asbury Park, N. J.; Lenox Garage and Auto Company; $2000; to deal in motor cars and to conduct a garage and hacking business; John A. Reid, William M. Reid, Egbert Reid.

Bridgeton, N. J.; J. Paul Bateman Company; $100,000; to deal in autos and hearse bodies; J. P. Bateman, J. H. Bell, A. Nichols.

East Orange, N. J.; Grave Taxi and Auto Company; $25,000; to buy and sell motor vehicles and patents for same; Robert M. Prophet, Sr., Robert M. Prophet, Jr., Sidney Simon.

Jersey City, N. J.; Mueller Motor Car Company; $25,000; to conduct a general automobile business.

Newark, N. J.; U. S. Auto Company; $60,000; to conduct a general automobile business; C. L. Fitzgerald, H. B. and James R. Weservelt.

Paterson, N. J.; Wagraw Garage; $25,000; to deal in motor vehicles; James H. Auburn, Philip R. Licker, John E. Glasser.

Binghamton, N. Y.; Overland-Binghamton Company, Inc.; $25,000; to deal in autos and supplies and to conduct a garage; F. H. Schwenke, H. J. and G. W. Shoemaker.

Brooklyn, N. Y.; St. Mark's Auto Storage Company, Inc.; $5000; to deal in autos and to conduct a garage; R. S. Dubois, E. A. Heffernan.

Brooklyn, N. Y.; Traffic Safety Device Company, Inc.; $5000; to deal in automobiles, supplies; R. B. Olsell, M. Dobzewitz, B. Kogan.

Mount Kisco, N. Y.; Russell H. Rawlings Motor Company, Inc.; $15,000; to deal in automobiles, to store and to conduct a garage and repair shop; T. E. Carpenter, I. Nathan, R. H. Rawlings.

Mamaroneck, N. Y.; Young & Co., $500; Charles W. Otto, A. Judson Young, John Clarke.

Manhattan, N. Y.; New Departure Garage, Inc.; $25,000; to deal in automobiles and to conduct a garage business; H. F. Sullivan, M. J. Wilson, P. B. Duryea.

Newark, N. Y.; Atterbury Truck Sales Company; $25,000; general automobile business.

New York, N. Y.; I. A. McIntosh Company, Inc.; $1000; Anna B. McIntosh, Ira McIntosh, Edward P. Mallory.

New York, N. Y.; Chadwick-Delamater Company, Inc.; $20,000; to deal in autos, garage, aeroplanes and motors; A. S. Banks, W. H. Chadwick, O. R. Delamater.

New York, N. Y.; Circle Securities Corporation; $5000; to deal in automobiles and accessories; L. H. Jaccard, E. Germain, C. E. T. Scharps.

New York, N. Y.; Gibraltar Motor Corporation; $100,000; to do a general motor car business; W. Hapeman, J. T. Smith, S. T. Warsaw.

New York, N. Y.; Goodman Auto Body Company, Inc.; $5000; Henry Goodman, Harold K. Goodman, Reginald Zunder.

New York, N. Y.; King Car Company; $10,000; to deal in autos, motors and engines; F. A. Keogh, W. R. Vogeler, W. B. Nesbitt.

New York, N. Y.; The Palace Auto and Motorcycle Supply Company; $5000; Catherine Emerson, George Emerson, Anna Emerson.

New York, N. Y.; Redden Motor Truck Company, Inc.; $10,000; to deal in motor vehicles and accessories; $5000; L. Rammo, F. Goette, J. J. Benedict.

Utica, N. Y.; The Utica Taxi and Auto Company, Inc.; $25,000; to sell automobiles, supplies, accessories and to conduct a general garage business; R. H. Batsford, G. H. Swancott, A. H. Batsford.

Germantown, O.; The Germantown Auto Company; $15,000; George P. Bailey, Fred Nunnamaker, Anthony Fischer, John Flinspach, Henry A. Thompson.

Toledo, O.; Burford Motor Truck Company; $25,000; to sell motor trucks; J. L. Skeldon, T. J. O'Connor, W. F. Ryan, E. V. Carmichael, D. T. Skeldon, W. M. Leach.

Germantown, Philadelphia, Penn.; The Germantown Auto Company; $15,000; J. L. Allman, E. L. Gehman, Charles Cogan, Forest H. Reighart and George R. Hinton.

Providence, R. I.; Adams-Rochlan Company; $10,000; to deal in autos and supplies; Chester W. Adams, Joseph E. Cochran, Alfred G. Chaffee.

Sioux Falls, S. D.; Brownell Company; $50,000; to deal in automobiles; H. F. Brownell, H. H. Brownell, J. Knapp Brown.

Wausau, Wis.; Wisconsin Auto Supply Company; $50,000; O. C. Lemke, L. M. Willard, G. D. Jones.

Newly Organized Manufacturers of Cars.

Dover, Del.; Emerson Motors Company; $10,000,000; Samuel B. Howard, L. H. Gunther, Joseph F. Curtin.

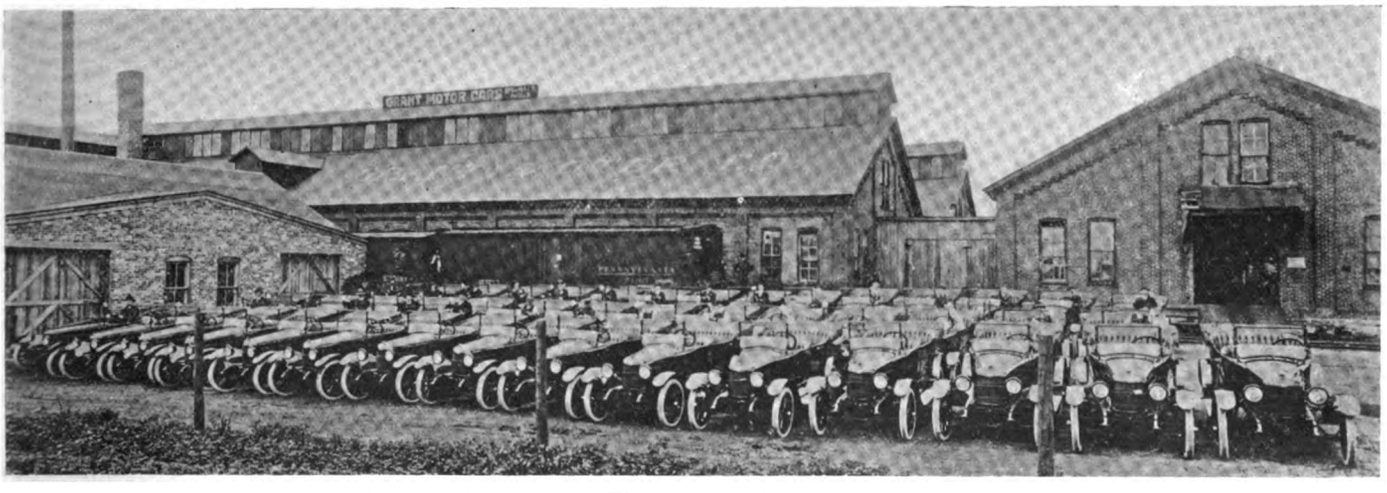
Wilmington, Del.; Maxfer Truck Company; $45,000; to manufacture and remodel motor cars of all kinds; Herbert F. Latter, Norman P. Coffin, Clement M. Enger.

Chicago, Ill.; Dearborn Motor Truck Company; $25,000; to manufacture and deal in motor trucks; W. G. Farnsworth, W. J. Kendrick, H. M. Guerin.

Bangor, Me.; The Brugan Company; $40,000; to deal in and to manufacture automobiles and all parts.

Newark, N. J.; Ourcar Company; $5000; to manufacture and deal in automobiles; George H. Miller, Frank A. Sweeney, John W. Gregory, Charles H. Smith.

New York, N. Y.; American Tire Sales Corporation; $100,000; to manufacture and



Grant Sixes Awaiting to Be Shipped—Sales Manager Waite of the Grant Motor Car Corporation, Relates That About 150 Cars Were Driven Away by an Equal Number of Ohio Grant Dealers Recently, the Longest Drive Being About 140 Miles from the Plant.

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deal in automobiles, tires, tubes and casings.

New York, N. Y.; Auto Safety and Protection Company of New York, Inc.; $100,000; to manufacture automobiles and all articles used in the construction of them.

New York, N. Y.; Barber Motor Truck Corporation; $500,000; to deal in and to manufacture automobiles, motor trucks and accessories.

Portland, N. Y.; Anderson-Hays Motor Company; $100,000; to manufacture and deal in motor vehicles, machinery and accessories.

Rochester, N. Y.; The Rauber-Fien Manufacturing Company; $25,000; to carry on a general automobile and accessory business.

Parts and Fittings Makers Incorporated.

Dover, Del.; O. K. E. Company; $600,000; to manufacture wheels for motor cars; Frank Oberkerch, William Kaul, Victor Lee Emerson.

Washington, D. C.; Commercial Auto Wheel Company; $300,000; to manufacture auto wheels for traction engines; J. F. McCafferty, John C. Neck, Charles G. Guyer.

Dunkirk, Ind.; Hoosier Sub-Carburetor Company; $10,000; to manufacture carburetors, sub-carburetors and automobile parts; Charles W. Smalley, George Black, John W. Fudege, John M. Singler, Jr.

Newark, N. J.; Guaranty Automobile and Repair Company; $100,000; to manufacture and sell motors; Bernard A. Kelly, James Kelly.

New York, N. Y.; Automatic Convertо-Body Company, Inc.; $10,000; to manufacture automobile bodies; Nathan Carr, Alfred Varian, Jr., Minnie E. Clark.

Buffalo, N. Y.; Engel Aeroplane and Motor Company, Inc.; $750,000; to manufacture motors, engines and aeroplanes; A. J. Engel, F. F. Grotz, W. F. Schohl.

New York, N. Y.; Essex Motor Truck Company, Inc.; $600,000; to manufacture motors, engines and to conduct a garage; D. K. Einfurer, G. Feeney, J. J. Miller.

New York, N. Y.; The Fleetwood Chassis Corporation; $50,000; to manufacture various kinds of chassis, motors, engines, cycle cars and automobiles; J. Price, W. G. Brown, C. P. Hollister.

New York, N. Y.; Green Starter Company; $65,000; to manufacture starters for automobiles and motorcycles.

New York, N. Y.; Goodman Auto Body Company, Inc.; $5000; to deal in car bodies for autos; Reginald Zunder, H. and H. K. Goodman.

New York, N. Y.; Schafer Ball Bearing Company, Inc.; $100,000; Christiane Barthel, Martha Daly, Frank P. Lyons.

New York, N. Y.; Vail Wheel Manufacturing Company, Inc.; $10,000; Adolph Reichtman, Thomas Wilkinson, Philip April.

New York, N. Y.; Wiley Motor Stores Company; $50,000; Fred D. Wiley, Walter H. Wiley, Lafayette Hanchett.

Rochester, N. Y.; The Motor Car Parts Company; $10,000; to make automobile parts and to deal in automobiles, accessories and supplies; Gay S. Clampitt, E. G. Solmser and Lawrence M. O'Brien.

Cleveland, O.; Denneen Motor Company; $225,000; to manufacture motors; F. S. Denneen, M. E. Denneen, W. A. David, C. N. Mitchell, John M. Garfield.

Pittsburg, Penn.; Burton Auto Fender Company; $100,000; to manufacture and sell fenders for automobiles and vehicles of all kinds; Ruth E. McCoy, C. L. Subert, W. A. McCoy.

Providence, R. I.; Page Motor Company of Rhode Island; $50,000; Harry F. Huestis, Jack B. Sperry, William H. Grout.

Providence, R. I.; States Motor Company; $10,000; Daniel J. Healey, James F. Padien, James E. Brothers.

Richmond, Va.; Chevrolet Motor Corporation of Virginia; $5000; R. G. Goad, president; Frank A. Gaynor, secretary.

Accessories, Equipment and Supplies.

Dover, Del.; Palmer Tire and Rubber Company; $500,000; to deal in rubber and gutta percha; Herbert E. Latter, Norman P. Coffin, Clement M. Enger.

Dover, Del.; Varoyas Safety Tire Company; $100,000; to manufacture tires.

Wilmington, Del.; Asfasco Automobile Supply and Filling Company, Inc.; $100,000.

Washington, D. C.; Vargyas Safety Tire Company; $100,000; to manufacture, sell and deal in and with automobiles, tires and supplies of all kinds; Eugene Von Vargyas, Lammie A. O'Dear, John P. Appleman.

Remington, Ind.; The Supert Manufacturing Company; $10,000; to manufacture automobile accessories; L. B. Elmore, president; O. B. Elmore, secretary, and S. E. Burns, vice president and treasurer.

Kittery, Me.; Globe Tire Service Company; $10,000; to sell, repair and deal in automobile tires, supplies and specialties; president and clerk, Horace Mitchell; treasurer, H. A. Paul; directors, M. G. Mitchell, Benjamin F. Bunker.

Kansas City, Mo.; Kansas City Tire and Rubber Corporation; $575,000; Harry Goodman, P. Werner, W. R. Seisler, L. J. Smith.

Newark, N. J.; Dayton Tire Company; $10,000; to manufacture automobile tires and accessories; Nathan Schwartz, Fred D. Rausler, I. G. Farmer.

Manhattan, N. Y.; George P. Harvey Company, Inc..; $25,000; to build auto bodies, design, manufacture and repair autos; G. P. Harvey, R. O. Burr, I. B. Kinger.

New York, N. Y.; Christofferson Motor Corporation; $130,000; to deal in motors and aeronautic devices; E. M. Rabenold, T. Dumoulin, T. A. S. Beattie.

New York, N. Y.; Giant Rubber Company; $50,000; to deal in rubber goods, tubes and tires; N. N. Nacman, A. Weiss, A. Feldman.

New York, N. Y.; Purity Oil Company of New York, Inc.; $5000; to manufacture automobile oils; Isaac Wheatfield, Isidor Kramer, Abraham Cooper.

Columbiana, O.; The Best Service Tire Company; $10,000; Elizabeth Hammond, Walter D. Rupert, Howard R. Orr, C. E. Shipman, Hazel Roller.

Cincinnati, O.; The Corcoran Tire and Rubber Company; $5000; Thomas J. Corcoran, Jacob A. Hollander, Charles E. Weber, Phil W. Tozzer, T. M. Sibler.

Pittsburg, Penn.; Auto Metal Body Company; $5000; Thomas F. Vremsock, M. K. Flannery.

Providence, R. I.; Dutee W. Flint Gasoline Company; $100,000; to sell gasoline; James E. Padien, Daniel H. Healy, James E. Brothers.

El Paso, Tex.; Bordeland Auto Supply Company; $10,000; B. L. Clements, Homer B. Lyne, J. M. Howland.

Unclassified Incorporations Recently Made.

Bloomington, Ind.; College Avenue Motor and Sales Company; $30,000; Nat. U. Hill, William Graham, Allen V. Buskirk, Charles Small, Joseph K. Barclay.

Boston, Mass; Demers Motor Specialties Company; $50,000; Louis O. Demers, president; Josiah S. Pishon, William G. Burns.

Brookline, Mass.; Coolidge Corner Taxi Company; $50,000; Frank L. Shea, Charles G. Galbo, Arthur P. French.

Omaha, Neb.; The Affinity Spark Plug Company; $30,000; W. K. Disbrow, M. V. Smith.

Bradley Beach, N. J.; Montauk Auto Service Corporation; $5000; to own, manage and maintain a line of jitneys; H. Clay Farrell, Jr., Stewart A. Farrell, Edward Keale.

South Orange, N. J.; Olympic Park Automobile Racing Association, Inc.; $125,000; automobile races, bicycle races.

Albany, N. Y.; Albany and Intervillage Auto Bus Line, Inc.; $25,000; F. Hungerford, G. F. Tompkins, W. F. Griffith.

Brooklyn, N. Y.; J. F. Flemming Company, Inc.; $2500; Thomas Byrne, Minnie Fleming.

New York, N. Y.; Brown Taxicab Company, Inc.; $277,750; W. K. Earle, J. E. Waid, J. D. Tansill.

New York, N. Y.; Princess Taxi Service, Inc.; $2000; Benjamin Waldman, Ferdinand R. Mayers, Samuel Horowitz.

Torrington, N. Y.; The Lyons Auto Company; $1400; president and treasurer, Timothy J. Lyons; secretary, Margaret S. Lyons; Benedict E. Lyons.

Akron, O.; Aero Rubber Company; $50,000; to manufacture rubber articles; A. A. Koplin, J. D. Salter, W. F. Wotring, Morgan Howells, W. R. Price.

Cincinnati, O.; Buckeye Tire Company; $5000; to deal in tires; Lehman R. R. Woolley, C. W. Shields, John Bleska, Stanley W. Lewis.

Cleveland, O.; Westgard Tire and Rubber Company; $10,000; to deal in tires; Joseph I. Eagleson, George S. Myers, J. F. Potts, E. L. Kratzer, B. E. Hoffman.

Cleveland, O.; Wright Tire and Rubber Company; $100,000; to deal in tires; Richard Ryan, Robert Wright, C. P. Wagner, C. F. Hiller, A. C. Foose.

Cleveland, O.; H. K. R. Company; $5000; E. C. Root, D. H. Kelly, R. R. Root, Louis Bloomfield, M. W. Vickery.

Columbia, S. C.; The Atco Company; $2500; to do a retail and wholesale jobbing business; L. Strasburger, O. R. Strauss, John B. Murphy.

Tacoma, Wash.; S. T. and E. Auto Emergency Company; $10,000; A. M. Schnase, M. J. Cole, F. E. Vogleson.

Charleston, W. Va.; Belington Taxicab Company; $5000; L. L. Bennett, E. S. Dawson, G. E. Cain, W. T. McVicker, J. A. Viquesney.

Milwaukee, Wis.; John Obenberger Drop Forge Company; $100,000; John Obenberger, L. S. Pease, Walter F. Mayer.

Garages and Repair Shops Newly Chartered.

Willimantic, Conn.; Willimantic Garage; $40,000; to conduct a general garage business; John L. Leonard, Jr., president; Peter L. Gagnon, vice president; Maurice S. Leonard, secretary; Arthur B. Small, treasurer.

Gary, Ind.; Verplank Garage; $10,000; to conduct a garage; G. O. Verplank, George Verplank, Albert Verplank.

Barbourville, Ky.; Logan & Archer Garage; $500; Leslie Logan, J. E. Archer, Beatrice Archer.

Louisville, Ky.; Best Manufacturing Company; $100,000; to manufacture motor car devices and electrical appliances for motor cars; George H. Turner, A. T. Burgevin, S. S. Fitzpatrick.

Waltham, Mass.; West End Garage Company; $30,000; William J. Barry, Hiram E. Tuttle.

Albany, N. Y.; Stewart Products Service Station, Inc.; $5000; to conduct a service station for Stewart-Warner speedometers; Frank Harter, Lola Harter, Elizabeth H. Waterman.

Albany, N. Y.; Ritz Garage; $10,000; W. Reirfeld, C. Goldberg, E. Egan.

Bronx, N. Y.; The Speier Garage, Inc.; $5000; Joseph Speier, Annie Speier, Milton Speier.

New York, N. Y.; The Terrace Garage, Inc.; $12,000; Davis Levin, Harry Weltfisch, George F. Gottkueb.

New York, N. Y.; Northern Boulevard Garage Company; $100,000; to deal in automobiles.

Southampton, N. Y.; Fero Garage, Inc.; $5000; James J. Fero, Thomas F. MacMahon, Bailey C. Elliott.

West New York, N. Y.; West Shore Garage, Inc.; $10,000; to deal in, rebuild and hire motor vehicles; Marcus Chalaye, Rene Chalaye, J. Phillip Dippel.

Cleveland, O.; Lakewood Garage; $25,000; to operate a garage; S. P. Palmer, D. R. Knisely, R. R. Palmer, R. M. Evans, M. I. Palmer.

Niagara, Wis.; Niagara Garage Transfer Company; $2000; C. C. Stevens, Hazel A. Stevens, Chester Brisbin.

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NEW CONCERNS AND CHANGES.

General News Regarding Transfer of Ownership and Opening of Garages and Agencies and Changes of Names.

The following data relate to the establishment of new concerns, including agencies, garages, branches, service stations, repair shops, etc., and from valuable information. Herewith is also recorded the recent changes of names of business concerns in the industry and allied lines, and the transfers of ownerships of businesses. The record includes all the states and is classified for convenience.

Recent Transfers of Business Ownerships.

Los Angeles, Cal.; Andrews & Marshall are the new owners of the Owl Garage, 4216 Moneta avenue. Both members of the firm are expert service and repair men.

Washington, D. C.; Brailey Gish has sold his interest in the Gish Garage and has taken the agency for Haynes cars.

Washington, D. C.; A. G. Lampe has bought the interest of Harry Myers in the firm of Myers & Lampe, who conducted the Arcade Garage. Mr. Lampe will continue to operate the garage under the same name.

Valdosta, Ga.; The Southwell Garage Company has purchased the M. M. Belote & Co.'s garage on East Hill avenue.

Melvin, Ill.; H. M. Wakelin has purchased the C. A. Platz Garage. He will enlarge the plant and expand the business.

Logan, Ia.; T. Jackson has bought the garage of Seabury Brothers.

Spencer, Ia.; D. C. Van Winkle has purchased the interest of his partner, A. Spangle, in the Spangle & Van Winkle Company and will conduct the business under the name of Van Winkle Auto Company.

Clay Centre, Kan.; Fred Peters has sold his garage and automobile repair shop on Lincoln avenue to Dennis F. Rock.

Lenexa, Kan.; Frank Newcomer has purchased the garage formerly owned by J. F. Spera.

Manhattan, Kan.; C. J. Davis and C. F. Apitz have formed a partnership for the repair of cars.

Bangor, Me.; A. Tilly has bought an interest in the Dodge Brothers Agency.

Fitchburg, Mass.; O. A. Bickford, proprietor of the Bickford Auto Company and manager of the taxi service business, has taken a 10-year lease of the Hastings Garage, and also a 10-year lease of the Sherman Garage.

Springfield, Mass.; The Dan O'Neill Company has bought property on Worthington street for $35,000. The old buildings will be razed and a modern garage will be erected.

Worcester, Mass.; Gustav Erickson has bought the Brittan Square Garage.

Albion, Mich.; Charles Bull has purchased a half interest in the Becker Garage.

Grand Rapids, Mich.; D. N. McNicol has purchased the East End Garage, located at Lake drive and Wealthy street.

Jackson, Mich.; Ralph Dennis and John Dixon are now owners of the old City Garage, 120-124 East Pearl street, and will be known as the Orpheum Garage.

Spring Lake, Mich.; Fox & Potter of East Jordan, have purchased the Spring Lake Garage and are now equipping it with modern garage appliances.

Ypsilanti, Mich.; Harry Heath has purchased the interest of L. A. Schapairo of Detroit in the Ypsilanti Vulcanizing Company.

Austin, Minn.; E. G. Granzee has sold his garage south of the Transcript Republican office to Clarence Rosenthal.

Carrolton, Mo.; Sam Minnis has sold his interest in the garage on East Heidel. General automobile service and repair work.

New Hampton, Mo.; J. M. Kelly has bought out Robert Maples Garage and will take immediate possession.

Mound City, Mo.; Roy Tough has purchased a garage.

Auburn, Neb.; George Coulter and L. L. Gritz have formed a partnership and have opened a new garage.

Central City, Neb.; Samuel Wilson has bought the Ford Garage from W. A. Irwin.

York, Neb.; J. W. Martin has become sole owner of the York Tire and Repair Company.

Nashua, N. H.; The Indian Head Garage has been purchased by J. H. Soucy and Gagnon Brothers.

Gregory, S. D.; B. E. Strong has sold his garage to Milo Moore.

Hurley, S. D.; A. R. Welch has purchased the Conklin & Redfield garage and automobile business.

Merkling, S. D.; C. A. Shepherdson has sold his garage and implement business.

Swanton, Vt.; The Hilliker Garage has been sold to H. W. Ballard of St. Albans.

Tacoma, Wash.; Perry Lash and James Hoyt has established a repair business at 1113 Tacoma avenue.

Tacoma, Wash.; H. D. Hopkins has purchased the Ideal Repair Company, 1127 Tacoma avenue. The company has added a complete vulcanizing equipment.

Berlin, Wis.; William Laechelt has sold the supplies and sales business to Tusin & Christensen, Berlin, and will devote his attention to the repair shop business, which will continue to occupy the entire basement floor of the garage.

Osceola, Wis.; F. O. Nugler has sold his garage and repair shop to Emil Zorn.

Peshtigo, Wis.; Arthur, Louis and Fred Lemense have purchased a site for a new garage and service station to be 50 by 100 feet one and two stories high. In addition to the agency and repair business a livery will be conducted.

West Bend, Wis.; Art Klug has sold his interest in the Kissel car agency to Winberg's Garage.

Garages and Repair Shops Opened Recently.

Los Angeles, Cal.; The Auto Tire Repair Company has opened up at 1208 South Main street.

Los Angeles, Cal.; G. Hamilton has opened a large garage at 1234 Olive street.

Clinton, Ill.; John Davis has opened a garage on North Centre street. He will maintain a Studebaker service station.

Cuba, Ill.; Marquis & Trotter have opened a new garage on East Jefferson street and will do a general repair business and carry a line of accessories. The firm was formerly engaged in a similar business in Peoria, Ill.

Springfield, Ill.; C. F. Ball and J. E. Ball have opened a garage at 327-329 North Sixth street and will specialize in electric and battery work. Accessories will also be carried.

Bangor, Me.; The Bangor Motor Company has opened a new garage at Northeast Harbor.

Norway, Me.; The Norway Auto Company has opened its new garage.

Barnesville, Minn.; A. A. Trovaten has opened a garage.

Hibbing, Minn.; Swan Hakale has opened a garage on Centre street.

Houston, Minn.; Edwin Mull has opened a tire repair shop.

Williams, Minn.; Ogden & Flint have opened a garage.

Higginsville, Mo.; E. W. Mollenkamp has opened his garage at 13th and Franklin avenue.

How the Chalmers Motor Company Is Adding About 25 Per Cent. to Its Present Floor Space by Erecting the Building Shown Above, Which Is an Exact Duplicate of the Other Three Main Structures—It Measures 400 by 60 Feet and Is Four Stories High, Costing Approximately $150,000.

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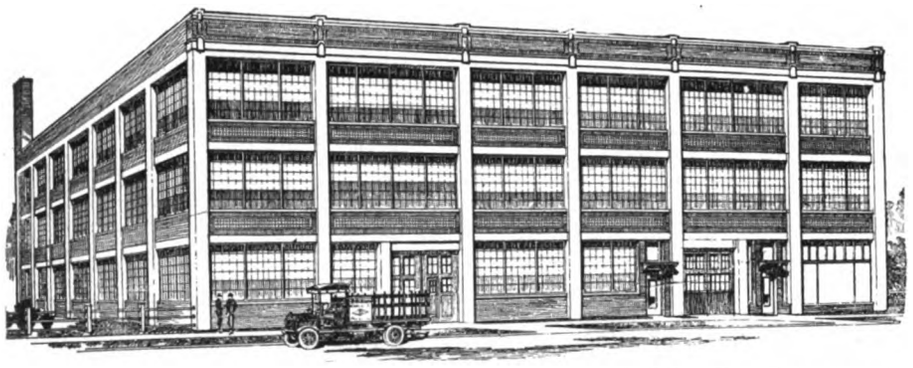


Architect's Sketch of the Three-Story Concrete and Steel Building Now Being Erected for the Standard Motor Truck Company at Detroit, Mich., for Manufacturing and Administrative Purposes.

Metz, Mo.; W. L. Charles has opened a garage in the Depot Livery barn.

Wheatland, Mo.; Ira R. Thatch & Son have opened a garage and repair shop.

Taylor, Mont.; B. E. Thompson has opened a garage and repair shop and has taken the Overland agency.

Billings, Mont.; The Yellowstone Garage, 2300 Montana avenue, has opened for business.

Blair, Neb.; F. C. Averill has opened a tire repair shop.

St. Paul, Neb.; C. E. Arterburn has opened a new garage and will handle the Chalmers.

Pawnee City, Neb.; Ben R. Henry has opened a repair shop.

Hansboro, N. D.; The Hansboro Garage is now open for business and is conducted by Sam Gagnon.

Lake Preston, S. D.; C. A. Lawler has opened a tire repair shop.

Newport, Vt.; H. W. Rann has opened a garage in the Miller building.

Wheeling, W. Va.; The Federal Garage and Supply House is now ready for business at 1500 Market street.

Milwaukee, Wis.; A. F. Hale, distributor for Reo cars, has opened a garage at 503 Beulah avenue.

Waubay, Wis.; Gar Beach has opened the East Side Garage.

Agencies, Dealers and Service Stations.

Birmingham, Ala.; The Cut-Rate Rubber Company, 216 South 21st street, has taken the agency for Mohawk tires.

Los Angeles, Cal.; The English Motor Car Company has established a used car plant and garage at 1046 South Main street.

Los Angeles, Cal.; Gillelen & Elmers have opened a tire and rubber accessory depot at 909 South Grand avenue and have the city agency for Hood tires.

Los Angeles, Cal.; The Miller Carburetor Sales Corporation has opened a service station and sales room at 834 South Los Angeles street. The factory, which is operated under the name of the Harry A. Miller Manufacturing Company, is still located on East Washington street.

Ventura, Cal.; Richardson Brothers' Motor Supply Company, Chestnut and Santa Clara streets, has undertaken a service station for Willard storage batteries.

Denver, Col.; W. G. Dickey Oil Company, 1441 Wazee street, Monogram oil distributor for Colorado, Wyoming, New Mexico, Kansas, Oklahoma and western Missouri, has opened a warehouse and branch office at Kansas City.

Hartford, Conn.; A. C. Hine, 314 Pearl street, distributor for Oakland cars, has also taken the agency for Knight tires.

Hartford, Conn.; A. Kaeser has been appointed manager of the new service station of the White Motors Company, 22 Chapel street.

Atlanta, Ga.; The Southern Auto and Equipment Company, 94 South Pryor street, has taken the agency for the Giant starters to be used on the Ford cars.

Goshen, Ind.; Goshen Stamping and Brass Company will represent Willard storage batteries.

Lowell, Mass.; Fred H. Rourke's new auto supply store at 280 Central street is open for business.

Springfield, Mass.; The Smith Carriage Company has taken the agency for the Olson Converting unit.

Webster, Mass.; The Belgian-American Vulcanizing Company has opened at 36 Prospect street. Isadore Bontems, president and general manager, and Henry B. Lucier, treasurer.

Worcester, Mass.; Jenkins & Robinson, Willard storage battery dealers, have opened new quarters at 75 Central street.

Battle Creek, Mich.; M. L. Brazie and Walter Schwartz have opened a new automobile livery, in connection with which they will operate a repair and storage business.

Battle Creek, Mich.; Albert Webber and Daniel Ross have opened a vulcanizing and radiator repair shop and will also sell accessories.

Jackson, Mich.; The Brooks Company has secured the agency for the Hupmobile.

Jackson, Mich.; E. J. Phillips has opened a new sales room and service station.

Minneapolis, Minn.; George A. Clark & Son, 227 North Fifth street, have added an accessory department. H. B. Groff is manager. The firm deals in farm implements and hardware.

Elmo, Mo.; George D. Brown & Co. has been appointed dealer for the new Smith-Form-a-Truck.

Springfield, Mo.; The Evans Motor Company has opened a branch.

Trenton, Mo.; J. A. Jones, agent for the Dodge Brothers, has opened a new sales room.

New York, N. Y.; The P. J. Durham Company, 244 West 49th street, has undertaken a service station for Willard storage batteries.

Devils Lake, N. D.; Robert Fosburgh has opened a tire shop.

Toledo, O.; The Boyd Tire and Supply Company has taken the distributing agency for Prest-O-Lite storage batteries.

Harrisburg, Penn.; Harrisburg Storage Battery Company, 11 North River street, has undertaken a service station for Willard storage batteries.

Pittsburg, Penn.; Joseph Woodwell & Co. has been appointed distributor for Federal tires.

Philadelphia, Penn.; The Berrodin Rubber Company, 7135 North Broad street, has now a large wholesale automobile accessory business and will continue to handle the wholesale and retail end of the G. and J. tires.

Providence, R. I.; The Chevrolet Motor Company has opened a factory branch on Broad street.

Providence, R. I.; The Co-Operative Auto Supply Company has opened a store at 130 Empire street.

Providence, R. I.; The Flint Motor Parts Company has opened a new store at 186 Fountain street.

Winooski, Vt; G. A and F. J. Child have opened a vulcanizing shop at 44 North Champlain street.

Tacoma, Wash.; The Gunn Motor Company has opened at 2330 South E street and will handle the Kelly-Springfield truck in Tacoma and southwestern Washington.

Martins Ferry, W. Va.; Earl Boyd has opened a new auto supply store in the Lupton building.

Fond du Lac, Wis.; Arthur and Anton Zeman have established a tire repair shop at Main street and Western avenue.

Changes of Names and Reorganizations.

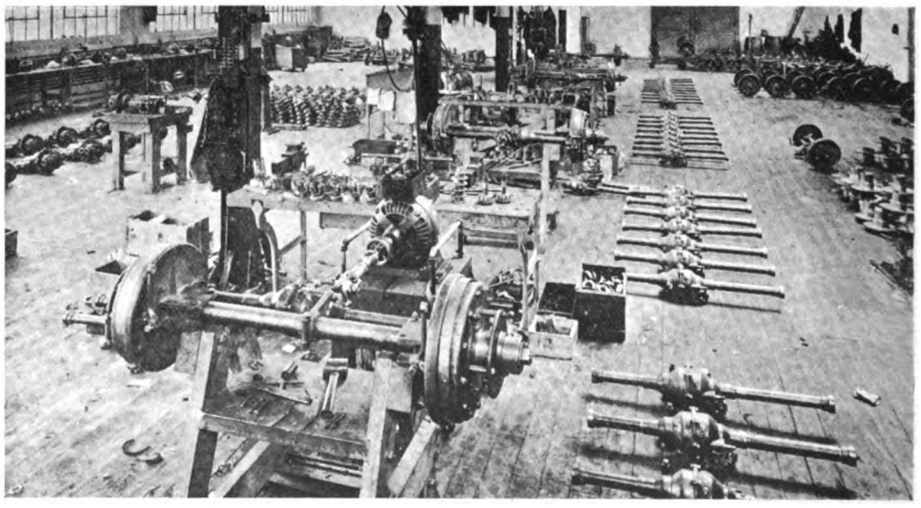
Denver, Col.; Cherry & Breon, 767 Broadway, has changed its name to C. E. Breon, who bought out his partner's interest.

Muncie, Ind.; Muncie Automobile Company has changed its name to Hanley Automobile Company.

Boston, Mass.; The King Motor New England agency has changed its name to The King Motor, Inc., with headquarters at 650 Beacon street.

Ollie, Mont.; Carl Sherva has bought the Floyd Grenier Garage.

Tacoma, Wash.; John J. Liljebeak has opened an automobile laundry under the name of Commercial Auto Company, 705 Pacific avenue. He also takes care of repair of all makes of cars.



Portable Testing Machines Used by the Russel Motor Axle Company, North Detroit, Mich., to Test Its Internal Gear Drive Axles Before Final Inspection—In the Test the Axles Are Driven by an Electric Motor at About 375 Revolutions Per Minute.

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AGENCIES RECENTLY APPOINTED.

Add to and Correct Your Mailing List—Symbol * Indicates Commercial Vehicle, † Electric, and ‡ Light Car.

ARKANSAS.

Little Rock—Abbott-Detroit, Auten Motor Car Company.
Pullman, H. H. Britts and D. A. Yancey.

CALIFORNIA.

Auburn—Oldsmobile, Allen Hall and A. H. Broyer.
Los Angeles—‡Vim, Harold G. Arnold.
San Francisco—Oakland, The Hawley King Company.

COLORADO.

Denver—Abbott-Detroit, Cassell Brothers.
Elgin, The National Motor Company, 1616 Broadway.

CONNECTICUT.

Derby—Oldsmobile, Derby Auto Co. (F. D. Gregory.)
New Haven—Halliday, The Elite Garage.
Ross, The Holcomb Co.
Torrington—‡Vim, D. C. Clark.

FLORIDA.

Jacksonville—Hupmobile, The Southern Motors Co.
Oakland Six, The Jackson Motor Car Company.

GEORGIA.

Albany—Oldsmobile, T. M. Nelson.

IDAHO.

Preston—King, J. A. Folkman.

ILLINOIS.

Belvidere—King, H. H. Collier.
Bloomington—‡Vim, Arnold Brothers.
East St. Louis—Jeffery, Dr. Rolla and Dr. Homer.

INDIANA.

Battle Creek—Oldsmobile, Garrott & Francis Hardware Co.
Greentown—Oldsmobile, F. F. Wagner.
Indianapolis—Oldsmobile, The Oldsmobile-Carr Co.
Winton-Six, The Meriden Motors Co., 963 North Meriden street.
Muncie—Abbott-Detroit, Rex Rosenthal.
South Bend—Oldsmobile, W. R. Hinkle, 315 E. Jackson street.

IOWA.

Council Bluffs—Oldsmobile, Raapke Motor Car Co.
Dubuque—Overland, M. Spencer.
Jessup—King, Miller Brothers.
Warsaw—King, C. B. Stevens, 421 South Union St.

KANSAS.

Hutchinson—King, F. R. Roche, 104-106 W. Sherman.

KENTUCKY.

Dry Ridge—Oldsmobile, Dry Ridge Motor Car Company.

LOUISIANA.

New Orleans—Abbott-Detroit, Thompson Motor Company.

MAINE.

Bangor—Abbott-Detroit, Herbert F. Friend, 49 Cumberland street and 96 Harlow.
Waterville—Empire, R. C. Whitney.

MARYLAND.

Baltimore—King, Hylo Sales Co.

MASSACHUSETTS.

Boston—Crow-Elkhart, Dimond & Strahan.
Davis, The Langham Motor Co.
Elcar, The Paine Krogman Co.
H. A. L., P. S. Bishop.
Patterson, George W. Russell, 1121 Commonwealth avenue.
Brockton—Dodge Brothers, The Henshaw Motor Co.
New Bedford—Ross, Lawrence H. Barney.
Springfield—Empire, F. S. Brewer (X Garage).
Inter-State, F. T. Russell.
Westfield—Maxwell, Frank Wichter.
Worcester—King, E. L. Caton, 739 Main St.
*Sheldon, F. S. Harvard Motor Company.

MICHIGAN.

Ellsworth—Chevrolet, James H. Elzinger.
Flint—Maxwell, Dain & Vermilyea.
Jackson—Crow-Elkhart, Adolph A. Koch.
Hupmobile, The Brooks Co., East Main St.
King, The Brooks Co., East Main St.

MISSISSIPPI.

Meridian—‡Vim, The Theefoot Brothers Co.

MISSOURI.

Appleton City—Chevrolet, M. P. Kinkead.
Booneville—Oldsmobile, A. H. Stephens & Son.
Kansas City—Studebaker, The Kerkland Daley Motor Company.
St. Louis—Crow-Elkhart, Hudson-Philadelphia Motor Car Co.
*Service, The Scudder Motor Truck Agency.

MINNESOTA.

Dodge Centre—Chalmers, R. J. Shaw.
Mahomen—King, B. C. Shuler.
Minneapolis—*Stewart, The Bogerstiess Rubber Co.
Triumph—Chevrolet, The Triumph Motor Company.

MONTANA.

Butte—Abbot-Detroit, Silver Bow Auto Co.

NEW HAMPSHIRE.

Hanover—Oldsmobile, E. G. Dewey, 17 College street.
Nashua—*Koehler, Howard E. Hartman.

NEBRASKA.

Genoa—King, John Munson & Son.
Lincoln—Chandler, F. B. Rinball & Sons.
Monroe—King, Monroe Auto Co.
North Platte—King, Groves & Jensen.

NEW JERSEY.

Passaic—Oldsmobile, Bergen Auto Company, 339 Main St.
Penns Grove—Abbott-Detroit, Doughton & Sparks.
Rutheford—Oldsmobile, Bergen Auto Co.
Wildwood—*Koehler, Harry Kehr.

NEW YORK.

Alden—Chevrolet, Howard L. Wright.
Buffalo—Abbott-Detroit, Decrow Motor Sales Co.
Flushing—Oldsmobile, N. Gilroy, Jr., 11 Farrington St.
Syracuse—Abbott-Detroit, H. R. Tennant.
Woodhaven—Oldsmobile, Woodhaven Garage (Schalk & Yates).

NORTH DAKOTA.

Dickey—National, George E. Duis.
Reo, George E. Duis.
Gilby—Buick, Haddon & James.
Dort, Haddon & James.
Oakland, Haddon & James.
Grafton—Abbott-Detroit, Charles F. Hanson & Son.
Leonard—Chalmers Brake Brothers & Frederickson.
Dodge Brothers, Brake Brothers & Frederickson.
Luddon—Buick, John Christenson.
Maxwell, John Christenson.
Minot—Oldsmobile, Elby & Young.
Niagara—King, Hans Georgeson.

OHIO.

Akron—*Vim, The Akron Selle Co.
Cincinnati—Abbott-Detroit, Ross Hill Garage.
Columbus—Case, John Hoffman.
*Koehler, Miller-Mains Garage.
Forest—Chevrolet, O. E. Hempy.
Mt. Gilead—Chevrolet, Ireland Brothers.
Portsmouth—Oldsmobile, F. L. Anderson.
Toledo—Abbott-Detroit, Barger & Mitchell.

OKLAHOMA.

Francis—Chevrolet, Ricky Gordon & McCoole.
Oklahoma—Maxwell, The Gorman Head Auto Co.

OREGON.

Portland—Scripps-Booth, The Braly Auto Co.
‡Vim, The Oregon Oakland Car Co.

PENNSYLVANIA.

Beaver Falls—Oldsmobile, C. B. McCarter.
Mifflintown—Oldsmobile, Juniata Automobile Co.
Naticoke—Oldsmobile, M. J. Reese.
Philadelphia—Abbott-Detroit, J. B. Maxwell.
*Detroit, The L. S. Hall Rubber Company, 1402 Ridge avenue.
Pittsburg—Abbott-Detroit, Motor Sales Co.
Shamokin—Oldsmobile, The Auto Inn (A. H. Kershner).
Sunbury—Oldsmobile, A. W. Pontius, 25 South Second St.
Wellsboro—Oldsmobile, Evans & Snyder.
Wilkes Barre—Abbott-Detroit, E. T. Shepard.
Zelionople—Chevrolet, W. C. Laderer.

SOUTH DAKOTA.

Corona—Elcar, George Clark.
Sioux City—Chandler, The Hanson & Tyler Auto Co., 220 E. 10th St.

RHODE ISLAND.

Providence—*Chase, Edward A. Dauer.

TEXAS.

Coolidge—King, Clyde Rhodes.
Edgewood—King, Dr. B. B. Brandon.
Greenville—King, W. F. Lewis.
Lockney—Chevrolet, C. A. Woodford.
Longview—King, G. N. Campbell.
Odell—King, J. A. Webb.
Palestine—King, Jno. Ormond.
Roby—King, Roby Garage.
San Antonio—King, San Antonio Motor Company, 511-513 Travis St.
Texarkana—King, Sanders Brothers Co.

VERMONT.

Brattleboro—King, H. P. Yearly.

WASHINGTON.

Seattle—‡Vim, George O. Barnes Motor Car Co.

WEST VIRGINIA.

Cornith—Chevrolet, J. F. De Berry & Son.

WISCONSIN.

Black River Falls—Overland, Hogg & McManners.
Milwaukee—Detroiter, Milwaukee Auto Sales Co., 799 7th St.

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PRACTICAL MOTOR CAR REPAIRS IN THE GARAGE.

ICED WATER SERVICE.

As the weather becomes warmer garage owners plan some arrangement whereby cool drinking water can be supplied to the work men. The usual method is to place a piece of ice in the water, but this is unsatisfactory, chiefly for sanitary reasons. In Fig. 1 is shown the method adopted in a large Rhode Island garage, the device being made by one of the work men and affording cold water without the ice coming in contact with the water.

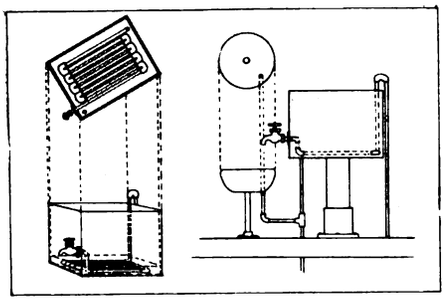

Fig. 1—Simple and Inexpensive Arrangement Affording Cold Water for Drinking Purposes Without the Ice Contracting with Water.

The coil is formed by eight short lengths of pipe and eight U joints. It is necessary to cut a left hand thread on one end of the pipes and a right hand thread on the other, so that the pipes can be screwed into the U joints. One end of the coil is then connected to the main water supply pipe, while to the other a faucet is fitted. The coil is placed in a box lined with zinc and mounted on a piece of piping or other suitable blocking. A small hole is drilled through the base of the box at one corner and a pipe fitted to extend outside the building. This pipe affords a drain for the melted ice. The cake of ice is, of course, placed on top of the pipe coil and then covered over with a piece of damp burlap.

A small pan having a drain, which connects with the drain pipe from the ice box, is placed directly under the faucet, thus preventing any water from spilling on the bench or floor.

CASE HARDENING MIXTURE.

A satisfactory case hardening preparation can be made by mixing three parts prussiate of potash, one part sal ammoniac and one part bone dust. If the cyanide of potassium thus made refuses to melt when used for case hardening, it is because it has become air slaked. To preserve it, seal in air tight cans.

FREEING THE EYE OF DIRT.

People who ride or do work on automobiles are very apt to get small particles of foreign matter in their eyes, and to prevent inflammation and other troubles it is imperative that these be removed at once. By gripping the upper eyelash with the fingers and placing a match against the eyelid, the latter may be turned up so that the inside is exposed. The "patient" should then move the eye up and down and to the left and the right. Wind a small piece of absorbent cotton around the end of a match and moisten it in clear water. The foreign particle can then be swabbed out, the object adhering to the swab.

A UNIQUE ENGINE STAND.

It is more convenient for the repair man to do work on an engine that has been removed from the car if it be placed on a stand instead of the bench. In Fig. 2 is shown a stand made of a discarded car frame, the frame having previously been damaged by accident, so that it could not be repaired. The sketch depicts the construction better than words could. The corners are formed by cutting away the channel sides and bending the ends over. The construction is made rugged by riveting all jointed parts. For convenience when placing or removing the engine from the stand, one of the end pieces is not riveted in place, bolts being used instead. By removing the bolts the end piece can be taken off and the engine slid in place, thus eliminating the necessity of lifting. The front end of the stand remains the same as it was on the car.

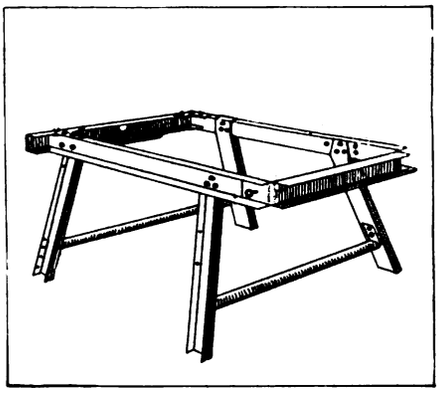

Fig. 2—Showing Engine Stand That Was made from a Discarded Car Frame.

ANNEALING STEEL.

Annealing steel is done by heating the metal to a cherry red and then allowing it to cool slowly. The higher the degree of heat applied to the metal, the softer it will be. This does not mean, however, that the higher the temperature the softer will be the metal when cooled, regardless of the slowness of the process.

There is nothing to be gained by heating the metal to more than a bright cherry red. On the contrary, a higher temperature has several disadvantages. If the metal is heated too high the steel will actually be harder when cool than a good red heat would leave it. Another disadvantage is that a scale of harsh, granular oxide of iron may be raised on the metal, which will spoil the tools used in cutting. A high scaling heat continued for a little time changes the structure of the metal, making it brittle and liable to crack in hardening. In this condition it is impossible to refine.

To anneal any piece of steel, heat to a uniform red throughout, taking care not to let the ends and corners get too hot. As soon as heated take it out of the fire and cool as slowly as possible. A good rule for heating is to bring it to a low red so that when the piece is cold it will show the blue gloss of the oxide which was put there by the hammer or the rolls. Steel annealed in this manner will cut very soft, harden to any degree without cracking and when tempered will be very strong and will hold a keen, strong edge.

PRACTICAL LIGHT STAND.

One of the chief requisites of the repair shop or private garage is that there be a well lighted work bench. In Fig. 3 is shown a method of suspending the ordinary electric light to be of the greatest convenience to the work man. It consists of a light rack suspended from the ceiling and directly over the bench. The rack may be easily constructed of small gas piping, two standards and a like number of elbows. The illustration explains the construction clearer than words can. The horizontal gas pipe forms a rail on which a small grooved pulley is run. To carry the light and also prevent the pulley from falling off the rail, two arms, as shown at B, are fitted. A cable is then attached to the arms, placed through guides at the ends of the rail and then carried under the bench. Should work man be at one end of the bench and the light at the other, by pulling the cable, the light will be moved toward him. This equipment also makes for economy, as a single light may be used in the place of two or more.

A good method of preserving a leather top is to apply a coat of castor oil. Saturate a clean, soft cloth and apply vigorously. The oil will both water proof and preserve the leather.

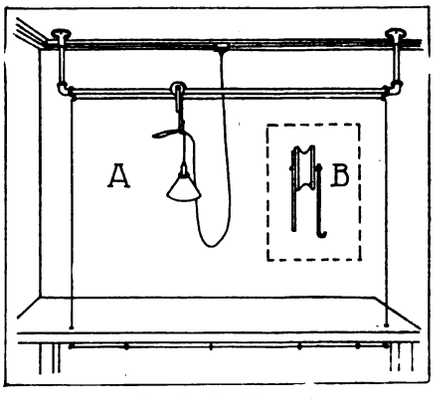

Fig. 3—Overhead Trolley Arrangement Which Allows the Light to Be Placed at Any Point Over the Bench.

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ALIGNING GAUGE.

To determine the alignment of the front wheels it is necessary to use some type of gauge. The one shown in Fig.

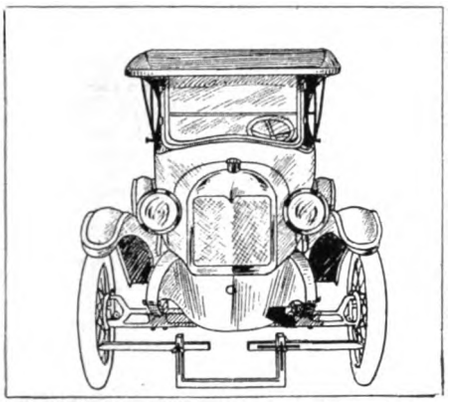

Fig. 4—An Aligning Gauge of Great Utility and How It Is Used.

4 is especially handy when it is to be used on many machines of different makes. The centre or base piece is made from a piece of steel and bent as shown. The upright pieces are slotted so that the extended arms are adjustable to height. The arms are made of wood and are so attached to the base that the distance from end to end is about 56 inches, this being the standard tread. Each arm is slotted, however, so that the distance may be lessened or made greater as the case may require. The advantage of this type of gauge is that it is a time saver. Its use eliminates the necessity of marking the wheel felloes. It is only necessary to place the flat base on the floor and set the height at the front of the wheels and it will be the same at the back.

EASILY MADE LEAD HAMMER.

Repair men use several methods in forcing rear wheels on axle shafts of the semi-floating type, and it has been noted that not a few of these do damage to the threads that retain the hub cap. In Fig. 5 is shown a practical soft metal hammer, which was constructed by a mechanic during his spare moments. It consists of an 18-inch length of gas piping one inch in diameter. One end was flattened in a vise and the edges slightly spread outward. The piping was then placed upright in the centre of a discarded cylindrical can and molten metal was poured around its base and allowed to set. When the can was cut away the formation of the hammer was as shown.

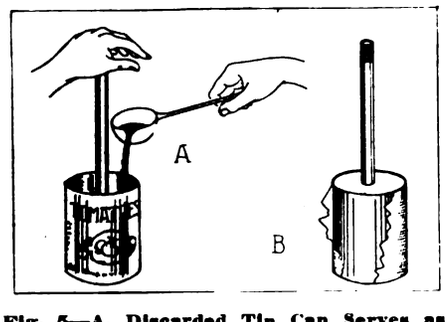

Fig. 5—A, Discarded Tin Can Serves as Mold for Hammer; B, Showing How Hammer Looks When Can Is Cut Away.

The advantage of this tool is that it may be used at the end or at the sides, is heavy and will deliver a decided jar to the wheel and cannot injure the threads.

NEW PLUG DESIGN.

A subscriber writes that he has designed a spark plug which "cleans, cools and primes itself, as well as finds its own trouble." The design is shown in Fig. 6, this sketch being made from a blue print which the inventor submitted.

No. 1 is the cross piece in the steel body of the plug; No. 2 is the contact point which strikes the cross piece, 1 (above the end of the contact point is a small valve, 5, which has a stem extending the entire length of the plug); No. 3 shows the brass sleeve which also extends the entire length of the plug and connects with the priming cup at the top; No. 9 is the porcelain insulator which runs within ¾ of an inch of the priming cup; No. 6 is a lever designed to contact with the top of the valve, 5, and press it down on the cross piece, 1, thus short circuiting the plug. The upper dotted line shows the plug short circuited, while the dotted line, 7, illustrates the position of the lever under ordinary

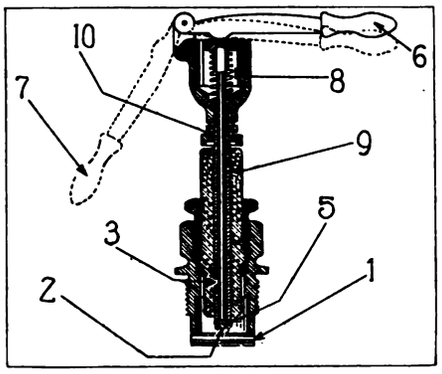

Fig. 6—Spark Plug Designed by Reader Which Is Automatic in Action.

operating conditions. No. 8 is the priming cup fitted to the top of the brass sleeve, 3. The secondary wire connects to the plug at the point marked 10. The valve stem, 5, is .003 inch smaller than the brass sleeve, 3.

The intake stroke of the piston in the cylinder causes the valve, 5, to be drawn down and contact with the body of the plug, 1. Air is drawn through the brass sleeve, 3, and passes into the cylinder. Statement is made that the small volume of air passing the contact points keeps them clean and the porcelain cool. The upward travel of the piston on the compression stroke separates the points about 3/64 of an inch and closes the valve. These operations occur at every suction and compression stroke of the piston.

To prime the engine, the gasoline is poured into the priming cup at the top. The suction stroke of the piston opens the valve and instead of air, the gasoline is drawn down the sleeve, pass the contact points and then ignited.

To locate ignition troubles the plug can be grounded by simply applying pressure to the valve by the lever at the top.

HANDY COMPARTMENTS.

When making repairs on a car it is poor practise to place parts which have been removed from the machine on the

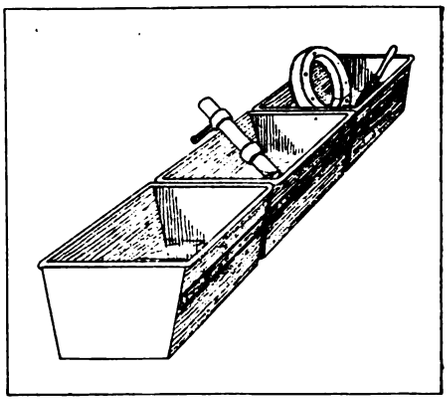

Fig. 7—Home-Made Parts Holder for Use While Repairing or Overhauling Car.

running board or set them at random on the bench. It is much better to have some small metal retainer which cannot easily be tipped over. Three ordinary bread pans fastened together serve this purpose well. As shown in Fig. 7, the three are connected by two pieces of thin sheet metal, and each is fastened to the strip by two rivets. The arrangement is extremely handy, as besides being used to store detached parts, it may be utilized to hold gasoline or kerosene for cleaning parts of the machine.

DRILLING BLOCK.

U shaped parts are not easy to drill. In Fig. 8 is shown a drilling block made from a section of an old crankshaft. The journals are sawed off so that two cheeks are available for use on the table of the drilling machine. The block can be easily secured to the table by a wooden clamp.

GLASS CEMENT.

To cement glass together, melt some resin and stir in calcined plaster until the mixture is reduced to a paste. Next add a sufficient quantity of boiled oil to make it the consistency of honey. Apply to the glass warm.

Another formula is as follows: Mix 180 parts of melted resin, 30 parts of burnt umber, 15 parts of calcined plaster and eight parts of boiled oil.

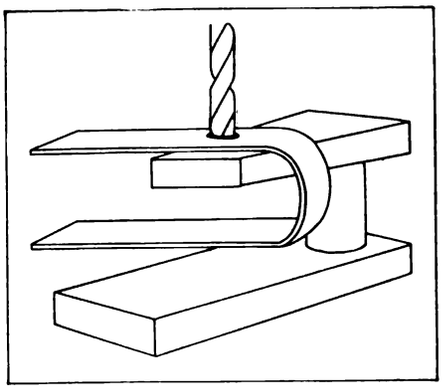

Fig. 8—Practical Drilling Block Made from Section of Old Crankshaft.

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NEW YORK AND DETROIT EXCHANGE QUOTATIONS.

Condition of Automobile Securities and General Material Markets as Reported at the Middle of Last Month and on the Corresponding Day of this Month.

The tabulations following show the advance or decrease in the quoted stock exchange prices of the several active motor vehicle and kindred securities, and of the change in prices of the general material market, as it relates to the motor car industry.

AUTOMOBILE SECURITIES QUOTATIONS.

	May 11		June 8	
	Bid	Asked	Bid	Asked
Ajax Rubber Co.	65	67½	68	69½
Aluminum Cast., pfd.	..	..	..	..
Case, J. I., pfd.	..	..	88	90
Chalmers Motor, com.	150	168	200	210
Chalmers Motor, pfd.	89	99¼	99	101
Chandler Motor Co.	..	..	262	264
Chevrolet Motor, pfd.	205	207	262	264
Electric Storage Battery	58	60	64	66
Firestone Tire, com.	820	850	840	860
Firestone Tire, pfd.	114	116	113	114
General Motors, com.	425	440	548	565
General Motors, pfd.	119½	120½	115	117
Goodrich, B. F., com.	77	77½	197	200
Goodrich, B. F., pfd.	114	116	105¼	106
Goodyear Tire, com.	385	393	197	200
Goodyear Tire, pfd.	119	121	105¼	106
Gray & Davis, Inc., pfd.	..	..	..	..
Grant Motor Car Co.	..	..	12	13
International Motor, com.	9	12	10	14
International Motor, pfd.	20	30	21	27
Kelly-Springfield Tire, com.	72½	73½	74¼	75
Kelly-Springfield Tire, pfd.	96	98	96	98
Kelly-Springfield Tire, 2nd pfd.	..	..	..	..
Maxwell Motor, com.	82	82½	85¾	86
Maxwell Motor, 1st pfd.	86⅝	86⅝	89¼	89¾
Maxwell Motor, 2nd pfd.	59¾	60¾	58	58½
Miller Rubber, com.	255	270	300	..
Miller Rubber, pfd.	115	..	104	106
New Departure, com.	190	195	275	..
New Departure, pfd.	112	..	112	115
Packard Motor Car, com.	165	175	240	..
Packard Motor Car, pfd.	100	104	101	105
Paige-Detroit Motor Car.	750	850	..	..
Peerless Motor Truck Corp.	23	25	25	26
Portage Rubber, com.	85	88	110	113
Portage Rubber, pfd.	107½	108½	112	114
Regal Motor Truck Co.	18	25	22	..
Reo Motor Car	28½	29¾	37	37½
Reo Motor Truck	38¾	39½	44½	45
Splitdorf Electrical	..	..	..	..
Stewart-Warner, com.	85	87	86	90
Stewart-Warner, pfd.	..	..	108	110
Studebaker, com.	132½	133½	141½	142½
Studebaker, pfd.	107	110	108	112
Swinehart Tire	83	84	83	84
Texas Company	190	192	190	192
United Motor Corp.	..	..	88¾	89
U. S. Rubber, com.	53½	54½	55¾	56¼
U. S. Rubber, 1st pfd.	109¼	110	109½	110
Vacuum Oil	237	240	248	253
White Motor Co.	49	51	57⅞	58⅛
Willys-Overland, com.	228	230	310	320
Willys-Overland, pfd.	104	105	111	112

DOMESTIC CRUDE OIL PRICES.

The prices of crude petroleum at the wells during the middle of the month of June were:

Pennsylvania dark	$2.60	Corsicana heavy	$.80
Mercer black	2.10	Electra	1.55
Cabell	2.12	Henrietta	1.55
New Castle	2.10	Caddo, La., 38°	1.55
Corning	2.10	Caddo, La., heavy	.90
Wooster	2.00	Plymouth	1.63
North Lima	1.73	California oil	.58a59
South Lima	1.73	Healdton	.90
Indiana	1.58	Moran	1.55
Princeton	1.80	Strawn	1.55
Somerset 32°	1.95	Thrall	1.55
Ragland	.90	De Soto	1.45
Illinois above 30°	1.82	Crichton	.90
Kan. & Okla.	1.55	Canada	2.13
Corsicana light	1.55		

Naphtha.

	10-gal. drums	
	Under 100 cases	100 cases and over
Benzine, 59-60°	34¼	33¾
73 a 76°	34½	34
Stove	38	37½
Auto, 68-72°	42	41½

	In cans and cases		
	Under 100	100-199	200-299
Benzine, 59-62°	29½	29¼	29
73 a 76°	37½	37	36¾
Stove	29¾	29½	29¼
Auto, 68-72°	33¼	33	32¾

NEW YORK CITY PRICES.

New York City prices for petroleum and its products were.

Petroleum.

Crude, barrels, a gallon	15a18	Fuel, 31°	9
Refined, barrels	12	Fuel, 34°	9½
Tank wagons delivery	9		

Naphtha.

Auto in wood	28	V. M. & P. deod., in steel	23
Auto in garages, steel bbls.	24	V. M. & P. deod., in wood	26

Gasoline.

Gas machine, steel	37	68-70° steel	29
73-76°	32	68-70° wood	32
73-76° wood	35		

GENERAL MARKET PRICES.

	May 15	June 14
Antimony	34½	21½
Iron, foundry, S., ton	15.00	14.75
Iron, foundry, N., ton	19.00	19.00
Iron, Bessemer, ton	20.50	20.50
Steel, Bessemer, ton	45.00	45.00
Beams and chan., 100 lbs.	2.769	2.669
Copper, elec., 100 lbs.	30.00	27.50
Copper, lake, 100 lbs.	30.00	27.50
Lead, 100 lbs.	7.50	6.80
Tin, 100 lbs.	49.12½	43.50
Petroleum, Penn., cr., bbl.	2.60	2.60
Petroleum, Kan., cr., bbl.	1.55	1.55
Linseed oil, raw	73	66
Rapeseed oil, refined	1.05	92
Lard oil, prime	1.10	1.05
Fish oil, Menhaden, br.	55	55
Sulphuric acid, 60	3.00	3.00
Cyanide potash, lb.	...	...
Cottonseed oil, bbl.	10.98	11.00
Silk, raw, Japan	5.35	5.55
Silk, raw, Italy	6.40	6.10
Rubber, fine, up-river, Para	71½	64
Tire, scrap	5¾	5¾
Steel, open hearth, ton	45.00	42.00

FOREIGN TRADE OPPORTUNITIES.

(Address Bureau of Foreign and Domestic Commerce, Washington, D. C., Giving Number, Which Will Forward Correspondence, Unless Otherwise Stated.)

Automobiles and Accessories. No. 21,136—A firm in Spain informs an American consular officer that it desires to establish commercial relations with American manufacturers of automobiles and accessories.

Motorcycle and Bicycle Accessories, Etc. No. 21,147—A man in Spain informs an American consular officer that he desires to receive catalogues and prices from American manufacturers of motorcycle and bicycle accessories, parts and small magnetos to attach to bicycles. Correspondence should be in Spanish.

Lubricants, Leather, Automobiles, Etc. No. 21,167—A commercial agent of the bureau reports that a business man from Spain, who has been in the United States for several months, is about to return to that country and desires to purchase petroleum and mineral oils, lubricants, greases, vaseline, galvanized-iron and steel plates, unfinished locks for doors and windows, kitchen enamel ware, vegetable colors and extracts in liquid and powder form, chemical products, washing powder, barrel staves, furniture woods, leather, scientific apparatus, typewriters and accessories, pencil sharpeners, dynamic explosives, electric meters, foundry machinery, water pumps, boilers, steam derricks, locomotives, marine engines, tools for making dies, bicycles and motorcycles, iron and steel wheels for carriages and motor cars and automobiles. The man desires to represent in Spain American manufacturers of these commodities, but is also prepared to purchase the goods outright, payments to be made cash against documents in New York. Arrangements have been made with a New York firm to handle all business.

Automobiles, Accessories and Sporting Goods. No. 21,210—A commercial agent of the bureau writes that a business man from Argentina is now in the United States for the purpose of establishing commercial relations with American manufacturers of automobiles and accessories, and sporting goods of all kinds. References are given.

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NATIONAL TRADE INFORMATION EXCHANGE.

Opportunities for Car and Accessory Manufacturers, Jobbers and Dealers which Have Been Reported from All Parts of the United States During the Past Month.

In this department subscribers are offered the opportunity to make known without cost to themselves those of their wants that pertain to the manufacture and distribution of motor vehicles. This service is free to all subscribers to the Accessory and Garage Journal and affords a medium whereby an inquiry will have the largest possible circulation among trade interests. If it is desired, the identity of the inquirer will not be disclosed in these columns. Replies to such requests should be sent to this office with sufficient postage for forwarding.

Gasoline Pleasure Cars.

Sioux City, Ia.; L. A. Sturns is interested in gasoline pleasure cars; selling price, $650 to $1050.

Chaska, Minn.; J. G. Bierlein is in the market for gasoline pleasure cars; selling price, $500 to $1500.

Marshfield, Mo.; Alfred W. Hubbell (Marshfield Garage), wishes to obtain the agency for gasoline pleasure cars; selling price, $500 to $1000.

Buffalo, N. Y.; Jones Motor Sales, 918 Main street, is anxious to secure the agency for gasoline pleasure cars; selling price, $700 to $1000.

Milwaukee, Wis; The Stutz Motor Company, 430 Jefferson street, is interested in gasoline pleasure cars; selling price, $700 to $1500.

Gasoline Commercial Cars.

Chaska, Minn.; J. G. Bierlein wishes to secure the agency for gasoline commercial cars; selling price, $500 to $1500.

Toledo, O.; The Burford Motor Truck Company, 351-9 Spitzer building, is in the market for gasoline commercial cars; selling price, $2000.

Electric Pleasure Cars.

Chaska, Minn.; J. G. Bierlein is in the market for electric pleasure cars; selling price, $500 to $1800.

Motorcycle Agencies.

Chaska, Minn.; J. G. Bierlein wishes to obtain the agency for motorcycles; selling price, $150 to $300.

Cyclecar Agencies.

Chaska, Minn.; J. G. Bierlein is interested in cyclecars; selling price, $250 to $350.

Representatives Wanted.

Springfield, Mass.; P. W. Mynor Company, 493 Sumner avenue, wants agents in all towns of 2000 population in Hampden county, Mass.

Buffalo, N. Y.; Safety First Auto Parts Company, Inc., 1283 Niagara street, desires to obtain agents and dealers to handle self-cleaning spark plugs, automatic rear tail light signals, automatic tire pumpers and gasoline savers.

Toledo, O.; The Burford Motor Truck Company, 351-9 Spitzer building, wants agents for Chicago, St. Louis, San Francisco, Seattle and Dallas.

Special Opportunity.

Calcutta, India; Hari Dhon Daw, 73 Old China Bazar street, is anxious to secure agency for a four-cylinder, four-passenger, strongly built car, selling price, $500 to $800, or an exceptionally good car selling at $1000. Is also interested in obtaining the agency for a passenger truck strongly built and selling at a medium price.

Indianapolis, Ind.; The W. R. Wheeler Company, University Park building, Pennsylvania and Vermont streets, has a general jobbing business and is interested in automobile accessories and motor shop supplies and in manufacturers' agencies for either automobile accessories or automobile material for sale to car manufacturers.

Hanover, Mich.; Rae Leggett, is interested in obtaining the agency for pleasure cars in the territory of Jackson and Hillsdale county.

Minneapolis, Minn.; C. L. S. Holmes, 2640 Grand avenue, is interested in obtaining one, two or more good lines to sell to wholesale hardware and wholesale auto accessory trade that would be developed to a constant business and increasing volume of transactions.

Brooklyn, N. Y.; Sloan Engineering Company, 240-246 Hall street, is interested in garage and repair equipment, supplies and accessories.

Buffalo, N. Y.; Safety First Auto Parts Company, Inc., 1283 Niagara street, is in the market to buy flexible shafting.

Accessories and Equipment.

Denver, Col.; Harry G. Peters, 1515 Cheyenne place, wishes to secure chains, gasoline gauges, greases, jacks, oils, patches, tire accessories, tires, tools and valves.

Washington, D. C.; Harper Overland Company, 1128-1130 Connecticut avenue, is in the market for air compressors, anvils, batteries, bumpers, chains, fire extinguishers, gasoline, maps, rims, tires and special bodies for commercial cars.

Sioux City, Ia.; Hawkeye Manufacturing and Repair Company, is anxious to secure axles, bearings, bodies, bolts, chains, dashes, drills, fenders, frames, horns, knuckles, levers, metal parts, mufflers, odometers, printed matter, radiators, reamers, starters, steel, steps, tanks, tools, tubing and special bodies for pleasure and commercial cars. The goods are to be used for manufacturing of trucks.

Sioux City, Ia.; L. A. Stearns is in the market for autogenous welding equipment, bodies, carburetors, castings, commutators, cylinder machines, fire extinguishers, greases, indicators, jacks, machinery, magnetos, maps, molds and cores, motors, pistons, radiators, seats, storage systems, tire accessories, wearing apparel and wheels. The goods are to be used for accessories and fundamentals for garage purposes.

Hanover, Mich.; Rae Leggett, wishes to obtain air compressors, air pumps, batteries, bearings, belts, bodies, bulbs, carburetors, clutches, coils, commutators, cones, controllers, couplings, cranes, cutters, cylinders, dimmers, drills, elevators, engines, fasteners, fenders, gaskets, generators, graphite, hammers, hoists, horns, hydrometers, ignition, jacks, joints, knuckles, lamps, lathes, shims, shock absorbers, sockets, switches, tape, terminals, timers, tools, tubing, valves, vulcanizers, waste, whistles, windshields and wrenches. The goods are to be used for accessories and equipment.

Chaska, Minn.; J. G. Bierlein wants anti-rattlers, anvils, asbestos, axles, batteries, belts, bodies, bolts, brushes, bulbs, cabinets, cable, cans, caps, cases, celluloid, cements, chains, chemical tanks, clamps, clips, cloth, connectors, cranes, cups, curtains, cushions, dashes, doors, drills, drums, dynamos, elevators, emblems, fans, fasteners, fenders, fire extinguishers, frames, forgings, furnaces, gaskets, gears, glass, goggles, graphite, grinders, guards, guns, greases, hammers, headlights, heaters, hoists, horns, hose, hubs, jacks, lamps, lathes, leather, levers, locks, lubricators, machinery, metal parts, meters, measuring instruments, motor controllers, motors, mufflers, nuts, packing, paints, pans, patches, pins, platinum, plugs, polishes, primers, printed matter, pulleys, pumps, punches, racks, radiators, ratchet drills, reamers, removers (carbon), rims, rods, rubber, scrapers, screws, searchlights, seats, separators, shafting, shims, shock absorbers, soaps, sockets, solder, speedometers, spokes, springs, stampings, starters, steel, steering wheels, steps, storage systems, strainers, switchboards, tanks, tape, terminals, testers, tire accessories, tires, tools, tops and parts, trimmings, trunks, tubing, turntables, upholstery, valves, vaporizers, varnishes, ventilators, vises, voltmeters, vulcanizers, washers, washstands, waste, wearing apparel, wheels, whistles, windshields, wire, wrenches and special bodies for pleasure and commercial cars.

Kansas City, Mo.; Rahe Automobile Training School, N. E. corner Eleventh and Locust street, is interested in air compressors, air pumps, anvils, batteries, engines, ignition, mechanical starters, starters and transmissions. The goods are to be used for equipment in the school.

Marshfield, Mo.; Alfred W. Hubbell (Marshfield Garage), wants information regarding autogenous welding equipment, bumpers, cones, drills, gear cutting machines, lathes, pinions, pistons, plugs, races, seats, tires and vulcanizers.

Atlantic City, N. J.; Pacific Garage (A. H. Generotzky, manager.), 1715 Pacific avenue, wants batteries, bulbs, bumpers, dimmers, emblems, fire extinguishers and shock absorbers.

Binghamton, N. Y.; George W. Decker, Ferry street, wants to secure air pumps, anti-rattlers, asbestos, autogenous welding equipment, batteries, belts, bolts, brushes, bulbs, bumpers, burners, carbide, celluloid, chains, charging apparatus, chemical tanks, clips, cups, curtains, cushions, dimmers, emblems, fans, fasteners, fenders, fire extinguishers, gaskets, gauges, glass, goggles, graphite, greases, guards, guns, hammers, headlights, heaters, horns, hose, hubs, hydrometers, jacks, lamps, leather, levers, locks, lubricators, magnetos, maps, meters, measuring instruments, molds and cores, motor controllers, motors, mufflers, nuts, odometers, packing, paints, patches, pedals, pinions, pins, plugs, polishes, primers, printed matter, pullers, pulleys, pumps, punches, races, racks, radiators, ratchet drills, reamers, rectifiers, reflectors, regulators, rims, rubber, screws, searchlights, seats, shapers, shims, shock absorbers, soaps, solder, speedometers, springs, stampings, starters, steering wheels, steps, storage systems, strainers, switchboards, switches, tanks, tape, terminals, testors, timers, tire accessories, tires, tools, tops and parts, trunks, upholstery, valves, varnishes, vises, voltmeters, vulcanizers, washers, waste, wearing apparel, whistles, windshields, wire and wrenches.

Brooklyn, N. Y.; George Koster, 2436 Putnam avenue, wishes to secure air compressors, air pumps, asbestos, boilers, fire extinguishers, jacks, greases, locks, lubricators, oils, pans, polishes, pumps, purifiers, radiators, separators, soaps, storage systems, tanks, turntables, vulcanizers, washers and waste.

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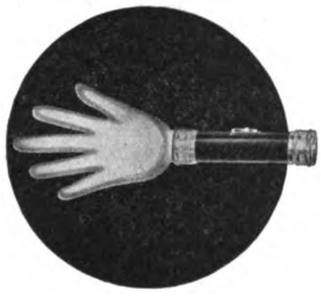
MOTOR CAR ACCESSORIES AND EQUIPMENT.

SAFETY AUTOMOBILE SIGNAL.

Safety in night driving is essential to real enjoyment, and to promote this some means of positive and sure signal-

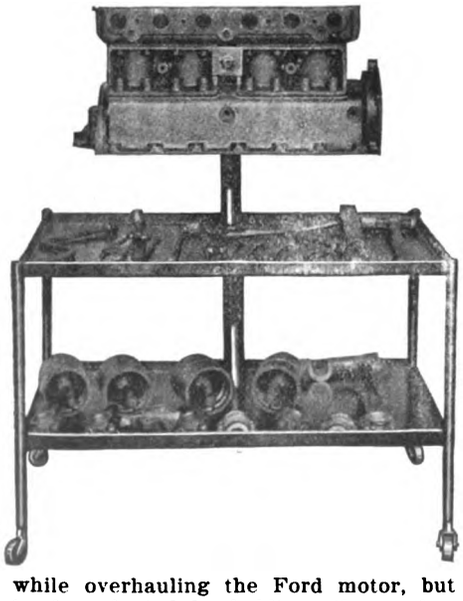


ing is necessary. There are several mechanisms on the market for this purpose, one of the best of which is the Universal signal, illustrated herewith. It consists of a blown celluloid hand that is fitted over a tubular battery lamp. This lamp, which is lighted for only an instant when signaling, has a special reflector that casts the light rays uniformly into the hand and illuminates it so that it can easily be seen for at least 300 feet. A feature of special interest is that in emergencies the hand may be removed from the lamp and the latter used as a trouble lamp. This signal should especially appeal to motorists, because it utilizes the same signaling system that is in vogue in the day time, and there can be no misinterpretation of its meaning when shown.

Marketed by the Yankee Manufacturing Company, Wells building, Milwaukee, Wis. List price, $2.50.

MOTOR REPAIR STAND.

Illustrated herewith is a repair stand which is designed primarily for use



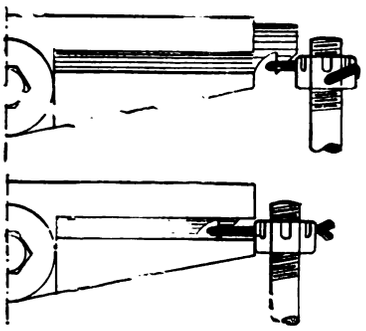
while overhauling the Ford motor, but is also adapted for holding other makes of engines. It is equipped with a telescoping post that can be adjusted to any desired height, and permits the motor to be turned to any position. The two shelves, which are 30 inches in length and 20 inches in width, are made of steel and welded to steel posts. The stand is mounted on four malleable iron casters, making it a simple matter to roll the table to any location desired in the shop. The illustration makes it evident to every repair man the advantages to be gained; the motor is conveniently located for doing work on it, while the two shelves are within easy reach and will hold all necessary tools and detached parts.

Repair shop owners who make a specialty of repair work on Ford cars will find much of interest in the Dyer reamer for Ford connecting rods and main bearings and also a reamer for Ford, Metz and Buick 10, cylinders. Besides being time saving tools, their use insures absolute workmanship, even by the unskilled workmen.

Manufactured by the G. H. Dyer Company, 155 Brookline street, Cambridge, Mass. Write for general catalogue and prices.

COTTER PIN PULLER.

Pulling out bent and rusty cotter pins has been a continual source of trouble and wasted time for almost every me-



chanic and automobile owner. The May's cotter pin puller has been designed with a view of lessening this trouble. It will abstract cotter pins regardless of their inaccessibility and but little effort is required to operate the tool. The pulling operation consists of simply closing the handles in a scissor-like manner. Besides straightening the pin, the device also holds it so that it will not be dropped in places where it would cause damage.

Manufactured by Harry May, 25½ Whitehall street, Atlanta, Ga. List price, $1.25.

IDEAL HOSE CLAMP.

The paramount feature of the Ideal hose clamps is that they are guaranteed not to buckle or cut the hose. They can be slipped over a pipe regardless of its position and can always be returned to the original shape by tightening the screw. The clamp is a two-piece device and when tightened bears at all points on the hose, positively eliminating all leakage. The simplicity of construction and attachment will appeal to all motor ists, repair men, garage owners, etc.

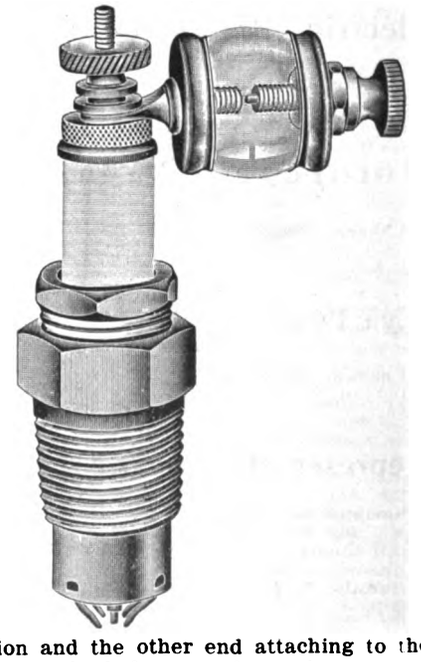
Distributed by J. H. Faw, Inc., 41 War-

ren street, New York City. Write for price list of water and steam clamps.

SPARK PLUG INTENSIFIER.

The Bigelow spark plug intensifier, illustrated herewith, should be of interest to car owners, especially those who have experienced considerable ignition trouble in the past. The purpose of this device is to intensify the current and thereby produce a very hot explosion. Its use is said to make a plug that is fouled with grease, carbon or soot, or that has a broken porcelain fire perfectly. Claim is also made that it increases engine power 20 per cent., does away with black clouds of smoke and makes it unnecessary for carbon to be removed from the cylinders.

Another feature of importance is that any current trouble is immediately detected. The barrel is made of magnifying glass and the operator can clearly see the spark jumping the gap. At night it is said to glow like an electric light. Attachment is simple, one end of the intensifier fitting the regular plug connec-



tion and the other end attaching to the terminal of the secondary wire.

Manufactured by the Bigelow Company, 321-323 St. Johns Court, Chicago, Ill. List price, 75 cents each.

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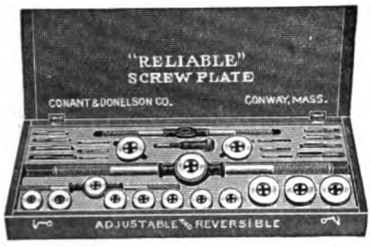
RELIABLE SCREW PLATES.

The Reliable screw plate, illustrated herewith, is designed especially for private and public garage use. Each die



in the outfit can be used for hand work, machine work and for cutting close to the bolt head without danger of breaking the threads. This set can be obtained in various sizes and for different forms of threads. Furnished with each outfit is the Reliable bit-brace die holder. This is a handy tool for use in a bit-brace for cutting threads on clips, dressing over bolts without removing them from their places, and in numerous other places where an ordinary stock cannot be used.

Manufactured by the Conant & Donelson Company, Conway, Mass. Write for descriptive matter and prices.

STERLING UTILITY CLEANER.

The Sterling utility cleaner, illustrated herewith, is an electrically operated machine designed especially for automobiles, stores, warehouses, churches, schools and telephone switchboards. It is of the portable, self-balancing type, and is neat and compact, weighing but 15 pounds. The outfit consists of machine, 20 feet of flexible cord, eight feet of hose and specially designed toothed nozzle and brush for cushions. Oilless wood bearings are used.

A feature of interest is that the Sterling can be converted into a portable blower in about 30 seconds by simply removing the bag and inserting the hose in its place.

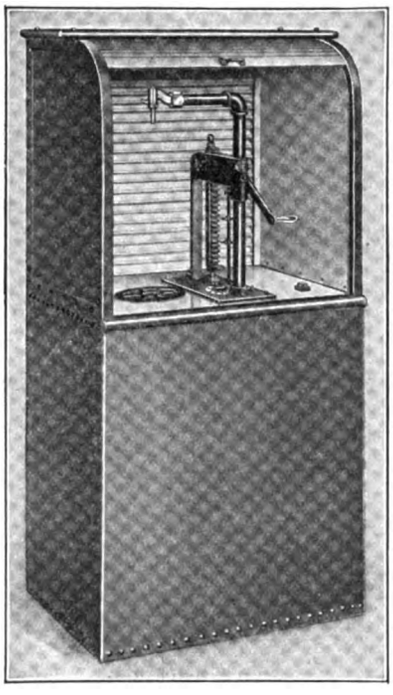
Marketed by the Sterling Sales Company, 343 S. Dearborn street, Chicago, Ill. List price, $29.50.

BOWSER OIL TANK.

The dissatisfaction experienced in handling lubricating oil improperly is well known. Without adequate facilities it is necessary to have dirty, oil-soaked barrels and measures about the premises and there is usually a great amount of waste due to evaporation, spilling, leaks, etc.

The problem of suitable storage can be solved by installing a Bowser 52-B outfit, illustrated herewith. This equipment provides means for storing lubricating oil in a compact and clean manner, insuring clean premises and convenience. The standard outfit consists of a quart self-measuring pump, nozzle, rectangular galvanized steel tank, drip pan, stick gauge and roll top cabinet.

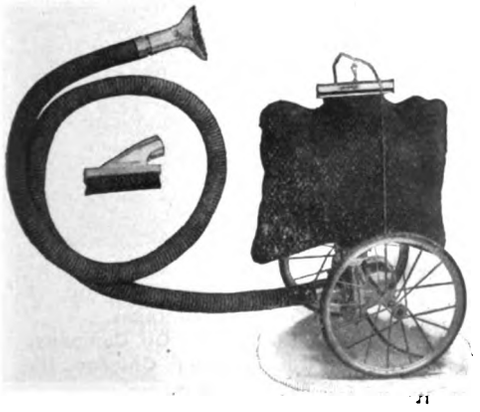
As can be seen in the illustration, the pump and top of the tank are completely enclosed by the metal roll top cabinet. The tank, together with the cabinet, insures the freedom of the oil from dust, dirt, lint and other foreign matter.



One complete stroke of the pump plunger draws exactly a quart of oil. Pint or half pint quantities can be pumped by a simple adjustment of the quantity lever. These adjustments are in plain view and easily accessible. The pump cylinder is made of seamless brass tubing, while the valves, valve seats, stuffing box, etc., are regularly made of materials most suitable for the liquid to be handled. A nickel plated anti-drip nozzle is furnished with the pump and is so designed as to effectively stop the flow of oil when pumping ceases.

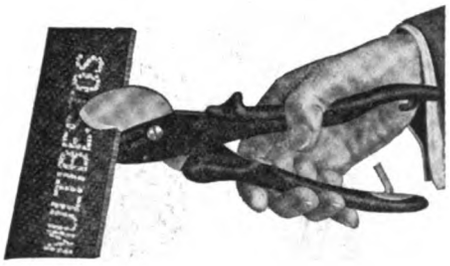
The tank is made of 14-gauge galvanized steel, with all seams carefully riveted and soldered from the inside to the outside. The finish is in dark olive green. The outfit is also equipped with a six-inch drip pan, so that any oil spilled on the tank is returned to the storage.

Manufactured by S. F. Bowser & Co., Inc., Fort Wayne, Ind. Write for prices and illustrated literature.



BRAKE LINING CUTTER.

The usual methods employed in most garages in cutting brake lining into lengths is to use a hack saw or a chisel,



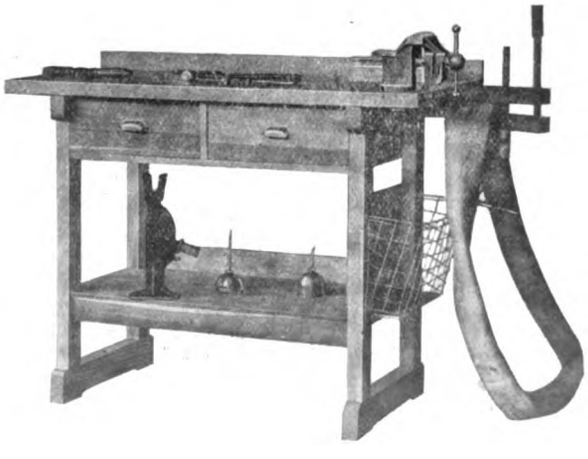
either of which do not afford results as satisfactory as can be obtained by using the Multibestos brake lining cutter, illustration of which is shown herewith. This tool will be found to be one of the greatest time and labor saving hand tools ever designed for the purpose, especially in view of the fact that it can also be used to cut cable, wire and light metals, and that it will easily cut through any brake lining regardless of width or thickness. The blade of the tool, which is removable for sharpening, is of hardened steel and is designed to withstand unlimited hard usage.

Manufactured by the Standard Woven Fabric Company, Framingham and Walpole, Mass. List price, $1.50.

GARAGE BENCH.

The bench shown in the accompanying illustration is listed as the Auto special No. 88, and is especially designed for use in the private garage. Its dimensions are 48 inches long, 24 inches wide and 36 inches high. The material is Michigan hard wood with built up top strongly bolted together, and the top is covered with galvanized iron. Each drawer is partitioned so that bolts, screws and sundry articles may be kept separate. The bottom of the bench is fitted with three-ply panel and back rail for storage of oil cans and other miscellaneous articles. On the end is a wire basket for waste and sponges. There is also an end extension slide on which tires can be vulcanized.

Manufactured by the Grand Rapids Hand Screw Company, 1430 Front avenue, N. W., Grand Rapids, Mich. List price, $15, not including loose tools or hand screw.



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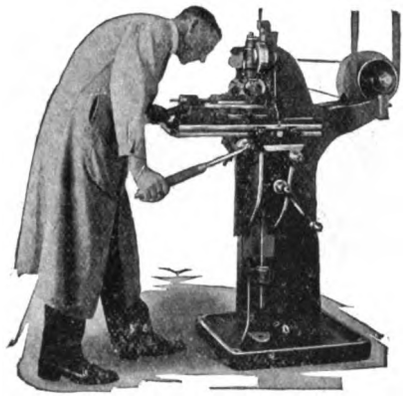
WHITNEY MILLER.

Any equipment which is adaptable to a number of purposes is of special interest to garage and repair shop owners.



The Whitney hand and weight feed milling machine, illustrated herewith, will cut gears, cams, sprockets, do key seating, profiling, slotting, slabbing, straddle milling and numerous other operations. The universal high speed milling attachment converts the miller into one of the most complete tools on the market for a wide range of work. It permits the use of end mills and makes the machine desirable for drilling and all classes of milling where small cutters and high speeds are essential.

The machine is furnished with three-grade cones and side pulleys for 1½-inch belts for light work or with two-grade cones and side pulleys for 2½-inch belts for heavy work. Write for descriptive catalogue No. 3.

Manufactured by the Whitney Manufacturing Company, Hartford, Conn. Prices quoted to responsible persons upon application to the manufacturer.

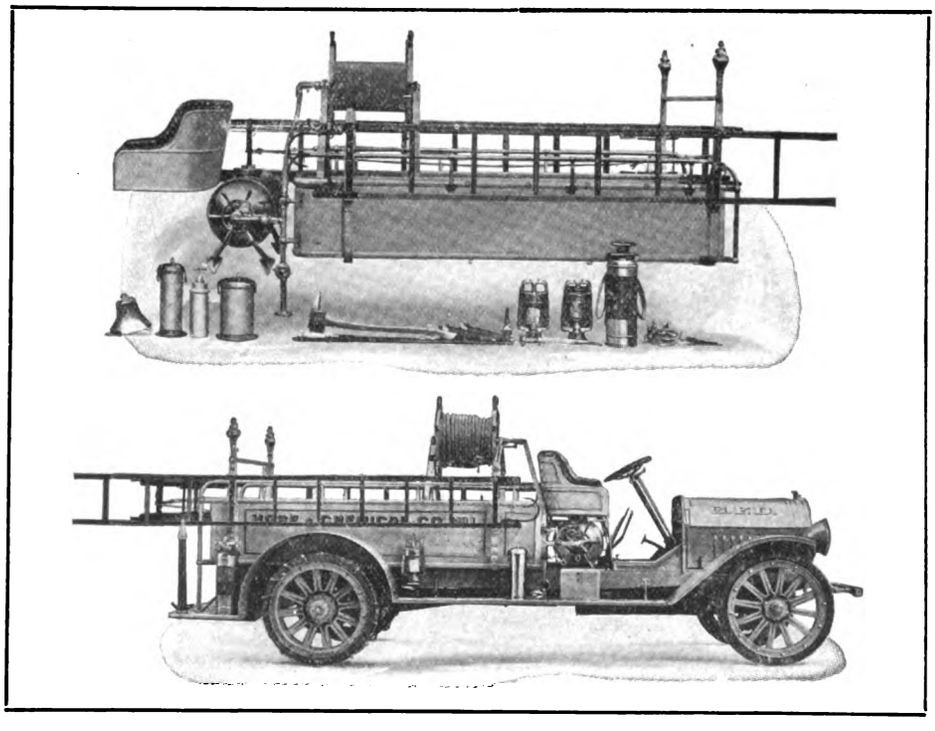
FIRE APPARATUS.

It is becoming apparent to municipal officers and fire chiefs that the combination chemical and hose car is a commercial truck proposition and does not necessarily require a large expenditure. Because of this, many commercial car dealers are meeting with much success in selling fire trucks. To assist the dealer to enter into this field, one of the leading fire equipment manufacturers has designed a complete standard outfit, which may be installed on any commercial car chassis.

This equipment is complete in every detail and is easy to order, as specifications with illustrations and a complete price list are supplied by the maker. The upper illustration shows the detached equipment, while the lower view is of the fully equipped and finished fire truck.

The work of installing and painting can be accomplished in any well equipped garage and paint shop. It is obvious that from a standpoint of economy, such a fire truck will appeal to the officials of many small cities and towns. Also, a truck so equipped is of great advertising value to the dealer, as such machines are always open to inspection.

Manufactured by the Northern Fire Apparatus Company, 2422 University avenue, S. E., Minneapolis, Minn. Write for catalogue and prices.



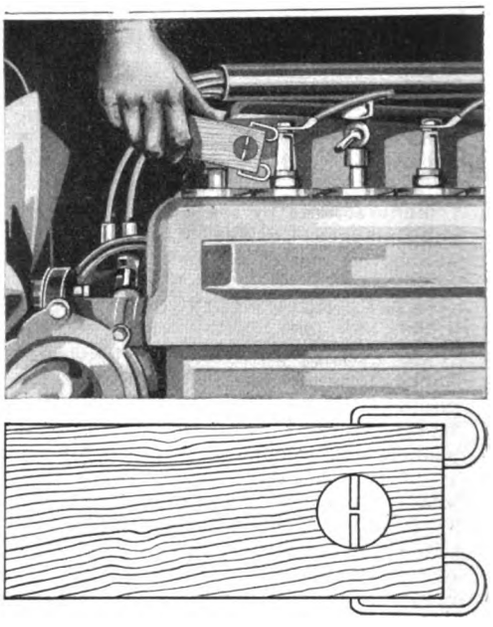
SPARK PLUG TESTER.

Dealers and garage owners will, no doubt, be interested in the Handy spark plug tester which is so inexpensive that they can be used for advertising purposes by being distributed among the patrons. It is simple in construction, consisting of two copper wires and a small piece of wood with a circular opening at one end. The wires are bent around two corners of the wood and passed through opposite edges into the aperture. The ends do not touch, but are about the same distance apart as the electrodes of the spark plug. The purpose of the device is to test the working condition of the plug. By touching the exposed parts of the wires against the terminal cap and the base of the plug, a spark will be seen to jump from one wire to the other if the plug is in good operative condition. This tester is light in weight and can be enclosed in first class mail matter without additional postage.

Manufactured by W. Jackson & Co., 302 New York Life building, Chicago, Ill. Write for prices.

CARE OF THE CAR'S FINISH.

In speaking of the general upkeep and care taking of the modern automobile, Robert A. Blackburn, manager of the International Metal Polish Company, Indianapolis, Ind., calls particular attention



to the fact that few owners, especially those who own their first machine, realize how easily the original factory finish and gloss on the body can be damaged, disfigured or destroyed by inferior body polishes. He states that all wax and gum preparations and polishes which contain alcohol, acids and other chemical paint solvents or removers, should be avoided when making a selection. The only safe polish to use is a preparation which will neither coat nor attack the fine finish, but will keep it flexible, full of life and prevent weather and old age from affecting it. All these qualities are claimed for the International company's well known and established Blue Ribbon brand of auto polishes and soaps, among which are an auto body gloss, cream metal and nickel polish, radiator cement, auto body and cold cream hand soap, black gloss enamel and auto top and seat dressing.

Sexton's castor motor oil is a compound consisting of pure castor oil mixed with other vegetable and mineral oils. It is said to afford all the desirable lubricating qualities of castor oil without any of its disadvantages.

Marketed by the Sexton Oil Company, 1103 Peoples Gas building, Chicago, Ill. Write for complete details.

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EASYON TIRE CHAINS.

Easyon is the trade name of a new kind of tire chain recently brought out. They are of the individual type and at-

tach to the spokes by means of leather covered fasteners which snap into the ends of the cross chains. Four chains make up a set for each wheel, as is shown in the accompanying illustration.

Easyons should appeal to all motorists because they are so convenient to carry and so easy to attach. The paramount feature is that regardless of the depth to which the driving wheels have sunk in mud, snow, etc., one or more of these chains can be easily fitted so as to regain traction.

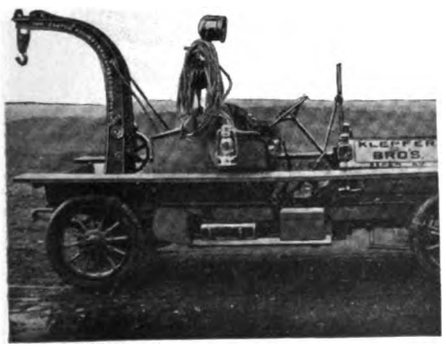
Because only three sizes of these chains need to be carried in stock to fit all sizes of tires, the dealer will find a big advantage in handling them. The small size fits three and 3½-inch tires; the medium, four and 4½-inch, and the large, five and 5½-inch.

Liberal discounts are allowed to dealers, which affords opportunity to make satisfactory profits, and a display stand is furnished when a half dozen or more sets are ordered.

Manufactured by the Leather Tire Goods Company, Niagara Falls, N. Y. List price per set for the small size is $2.40; for the medium, $3.20; for the large, $4.

CANTON PORTABLE CRANES.

The Canton No. 3, garage special, portable crane, is designed to meet the requirements of garages and automobile factories. It has a large over hang of 3½ feet, which permits the crane to lift an engine out of the chassis without marring the sides of the car.



In the accompanying illustration is shown how a New York repair shop fitted the crane to a machine so that it could be used for towing in broken-down automobiles. The equipment consists of the Canton portable crane, less base, firmly bolted to the bed of the truck and supported by two tie rods that extend from the arms of crane to the bottom of the truck bed.

The public garage or repair shop owner will see at a glance that this equipment will serve a double purpose. It will handle all kinds of repair work in the shop and emergency work on the road. Send for catalogue, which fully describes and illustrates the outfit.

Manufactured by the Canton Foundry and Machine Company, Canton, O.

TIRE WRAPPING MACHINE.

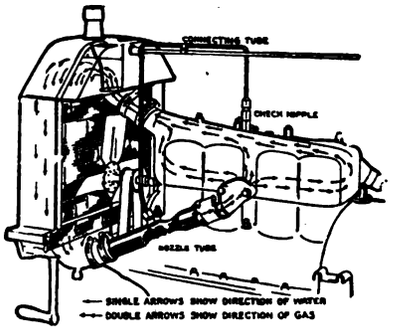
To properly vulcanize rubber it is of paramount importance to secure the proper pressure, as otherwise the rubber assumes a sponge like consistency. In retreading, the successful application and subsequent adherence of the tread rubber to the carcass of the casing has

a direct bearing on the final results obtained. Rossman's bandage wrapping machine, illustrated herewith, is designed to wrap a tire quickly and with mechanical precision so that an unvariable tension is brought to bear on all parts of the tire. Any desired amount of pressure can be obtained by merely adjusting the simple tension device, which regulates the strain at which the bandage is applied.

Manufactured by Roy G. Rossman, 707 East Pike street, Seattle, Wash. Write for descriptive circular and price.

PERFECTION WATER CIRCULATOR.

Overheating of the Ford motor is said to be an impossibility when a Perfection water circulator is installed in the cooling system. Its purpose is to maintain the temperature of the water at 195 degrees, which is the correct point to obtain the best motor operation. The circulator is really an air-operated ejector, designed to utilize a small portion of the exhaust gas from the motor by carrying it into the lower connection between the radiator and the engine. The water at this point is forced forward by the exhaust, moving towards the engine. The



pressure and velocity of exhaust gas and heat generated in the cylinders are proportionate to the amount of fuel burned.

The device has no moving parts, no adjustments, cannot leak, requires no power, occupies no additional space and can be quickly installed without alteration of any part of the car.

Manufactured by the Motor Cooling Systems Company, Baltimore, Md. List price, $7.50.

AUTO WASHING EQUIPMENT.

Painters always advise car owners to use plenty of water when washing the machine. The Hahn fountain brush and sponge adequately meet this requirement. The sponge, like the brush, is held by a hollow handle that connects with the ordinary type of garden hose. Any quantity of water desired can be run through the brush or sponge. The washer is made of the best Tampico fiber, and the brush material is so held in the back that it cannot come out. The brush is seven inches in length and the handle, including hose connection, is 4¼ inches long. The back being but one inch in width makes it possible to reach between the spokes of the wheels, around the springs and other inaccessible places. The sponge attachment is so constructed that a new sponge can be placed in the holder very quickly and without difficulty.

Manufactured by the Hahn Manufacturing Company, 1916 West Washington street, Indianapolis, Ind. List price of washer, $1, and for the sponge handle attachment, 50 cents extra.

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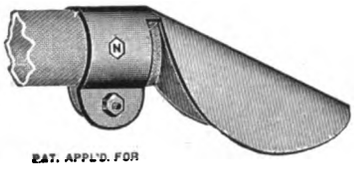
EXHAUST DEFLECTOR.

Illustrated herewith is a device designed to clamp around the end of the exhaust pipe to allow it to be easily



turned in any direction. It is especially desirable for deflecting the hot exhaust gases from the rear lamp or tires carried at the back of the car. This article does not impede the exhaust in any manner. It is finished in black enamel.

Manufactured by the A. Nelson Manufacturing Company, 564-572 West Randolph street, Chicago, Ill.

CASTER AND JACK.

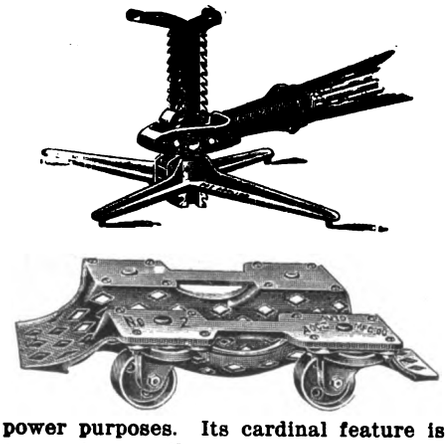
The simplest way to move a car when space is limited is to place it on casters and then slide it to the desired position. The Norwood three in one combination is designed for this purpose. It consists of a caster for moving and turning automobiles and trucks, and a jack which has a broad base, extended top, long handle and which is capable of lifting and lowering two tons. The jack is also designed to fit the caster so that cars can be moved about while on the jack without danger of accident.

The caster frame is one solid piece of malleable iron and is light, strong and rigid. Ball bearing casters delicately respond, thus permitting the machine to be turned or moved very easily in any direction.

Manufactured by the Automobile and Accessories Manufacturing Company, 408 Continental building, Baltimore, Md. Write for descriptive circular and prices.

AUTO ENGINE COMPRESSOR.

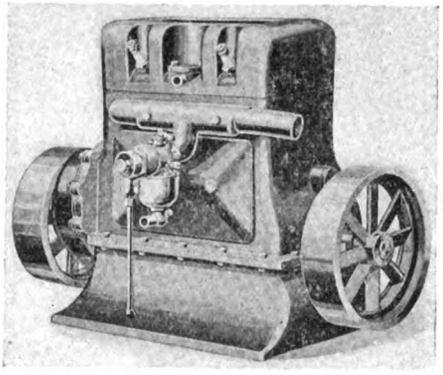
Illustrated herewith is an auto engine compressor which combines all the functions of an efficient air compressor with those of a gasoline motor for light



power purposes. Its cardinal feature is compactness, the compressor, power plant, driving pulley, ignition and fuel supply being incorporated in the unit. It is ideal equipment for the repair shop, machine shop, small factory, farmer and private and public garage.

There are three cylinders set in line and cast in one block. The two end cylinders furnish the motive power by the four-cycle principle, while the centre member supplies the air. When required as a power plant only, the compressor cylinder is released by simply turning a lever. The outfit then operates like any conventional gasoline motor and transmits its power by belt to any machinery that can be run by three horsepower or less. The motor is of the L head type with poppet valves. It has a bore of two inches and a three-inch stroke. The air compressor cylinder is of the same dimensions.

The crank case is divided on a line with the crankshaft, the upper half being integral with the cylinders. The lower half is separated into two distinct compartments and retain the lubricating oil and fuel. These compartments are cast with the case, thus obviating any possibility of leakage from one into the other. The air pressure from the compressor elevates the fuel to the car-



buretor, affording a positive feed.

The exhaust and intake valves of the motor and the intake valve of the compressor cylinder are interchangeable and are operated by a single camshaft. The compressor exhaust valve is automatic and of unusual pattern. It consists of a single disc of alloy steel, so designed that the full port opening is secured with a lift of less than .02 of an inch.

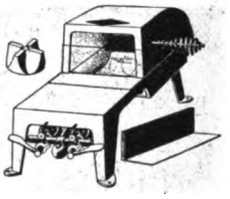
By the S. A. E. formula this motor has a rating of 3.2 horsepower. It is designed to run at a normal speed of 1200 revolutions per minute, and at this rate pumps 6½ cubic feet of air a minute. Statement is made that the compressor is capable of obtaining a maximum pressure of 300 pounds to the square inch.

Ignition is by a high-tension magneto coupled compactly to the motor, while lubrication is by the splash system. Bearings are of die cast nickel babbitt. The motor is water cooled, having a capacity of 1½ gallons in the jacket surrounding the cylinders. A water intake extending upward in the form of a reservoir makes filling convenient and simple. The complete weight of the outfit is approximately 100 pounds.

Manufactured by the Auto Compressor Company, Wilmington, O. Complete description and price on request to the maker.

BENCH FURNACE.

Johnson's No. 101 bench furnace may be used for case hardening, annealing, heating for tempering, heating soldering



coppers, capping steels and for similar purposes. It is equipped with two powerful auto blast burners, which have a gas consumption of only 12 to 30 cubic feet per hour. The removable work rest block shown in the illustration when placed in the combustion chamber allows the flame to completely envelop and evenly heat the work placed upon it. There is also a baffle plate, which, when used to partially close the mouth of the furnace, insures an even temperature in the combustion chamber. There is also a rear shelf, which affords a rest for the soldering coppers and prevents the flame from directly striking the points.

Manufactured by the Johnson Gas Appliance Company, Cedar Rapids, Ia. List price, $10.

GASOLINE TORCH.

Every public and private garage should be equipped with a reliable gasoline torch, as its general utility use makes it of much value. Ashton's line of Red-Hot torches are designed to meet every requirement. Illustrated herewith is the No. 10 torch, which is made to supply the demand for a durable, well made article selling at a low price. In the handle is incorporated an automatic pump with automatic check value. The tank, which has capacity for one quart of fuel, is made of heavy seamless drawn brass, fitted with concave bottom, which serves as a funnel and prevents the overflow of the gasoline when filling. The burner is equipped for heating a soldering iron.

This torch is sold under the same guarantee as the remainder of Ashton

products: "Satisfaction or money refunded."

Manufactured by the Ashton Manufacturing Company, Newark, N. J. List price, $6.80.

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FISK
Gold Bond Tubes

The Fisk Red Tube, known as the Gold Bond, is a tube of heavier construction than the Grey and is particularly adapted to the heavier type of cars.

It is tougher than the Grey and less subject to pinching than the majority of other tubes. It is made laminated with layer laid on layer, in order to prevent any imperfections which might otherwise be present undetected.

The Gold Bond Tube is made to fit all size casings. You will find in it all the characteristics which Fisk now means and always has meant—highest quality, sold at a price as low as possible on the superior Fisk grade of product.

Our Branch System enables you to obtain tubes and everything else we make, without loss of time or orders.

If interested, Write at Once to Dept. A for the Fisk Dealer Plan

THE FISK RUBBER COMPANY
of N. Y.

Chicopee Falls **Mass.**

Fisk Branches in All Principal Cities

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Four-cylinder motor, 2¾ by 4, with 3-speed sliding gear transmission, unit power plant, shift levers center control, equipped with Zephyr carburetor and hot air stove, high-tension magneto, 12 Leak Proof piston rings, excellent conditions, guaranteed, weight 300 pounds, 15 horsepower at 2400 revolutions, 36 inches over all; suitable for light car up to 1800 pounds; ready to drop in chassis; 30 miles to gallon guaranteed. Price $60 f. o. b. N. Y. City. Also brand new Allis Chalmers single unit generator and self-starter, silent link chain drive, complete with chains and gears, ready to install. Price $40. Address Chas. G. Percival, Teaneck, N. J.

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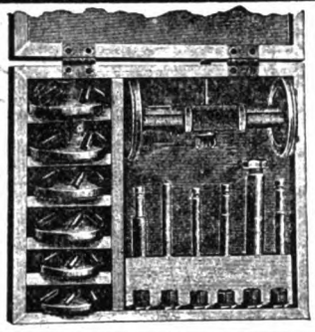

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They are proven one-piece rings that can be quickly fitted to the pistons and cylinders of any engine.
ALL NON-SET stock rings are made with step-cut joints and .0025 oversize to compensate for wear. When specially ordered miter joints will be supplied.
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Published Monthly

Times Building, Pawtucket, R. I.

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The simplest and most comprehensive record ever conceived, adaptable for use with any method of house bookkeeping or independently, that can be made to serve as part of any method of accountancy.

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The Motor Truck

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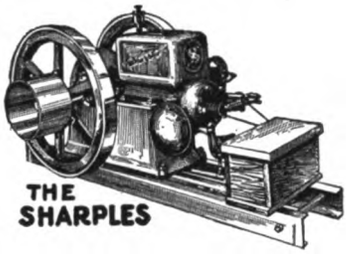

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PRICE COMPLETE, $3.50

The ACME STEERING CONTROLLER is a simple and substantial Accessory, of practical value to all Ford Car Owners.

By the pressure of two coil springs acting upon the tie rod, the car automatically tends to a straight course, regardless of holes and obstructions, thereby relieving the strain of driving.

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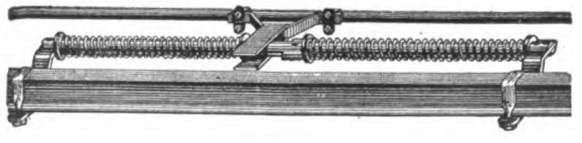
Have the device in stock and be in line for sales.

Be the first dealer to introduce the ACME STEERING DEVICE in your territory, and gain this advertising advantage.

Write to your jobber or to us for the discount to dealers.



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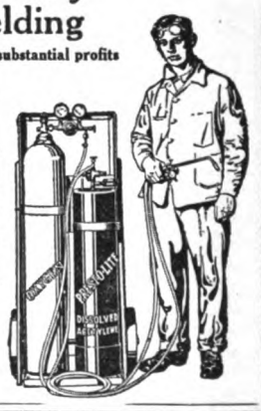

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It fires every time with speed controlled by Auto Throttle Governor, not hit-and-miss governed as are other engines. Ideal for shop or farm. Will operate machinery, pump water, run separator, cut feed, etc. Complete ready to run, including gasoline tank, skids, coil, etc., only $35.

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Absolutely contains no WAXEY or GUMMY substances.
Does not coat the surfaces and catches no dust.

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BLUE RIBBON AUTO BODY GLOSS cleans, renews and repolishes or revives the ORIGINAL FACTORY GLOSS.

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INTERNATIONAL METAL POLISH COMPANY, INDIANAPOLIS, IND.

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New Carleton No. 68 Generator

7 Volts, 7 Amperes, d. c. Steady Light either with or without Storage Batteries.

COMPLETE ELECTRIC LIGHTING EQUIPMENT FOR USED OR NEW CARS.

MOST EFFICIENT. LOWEST PRICED.

Will Charge any 6 Volt Storage Battery

Simple and positive drive, easy to install, guaranteed to meet all requirements.

SPECIAL EQUIPMENT FOR FORD, SAXON AND METZ CARS. (see cut)

No machining or alterations. A screw driver and wrench only needed.

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Mabey's Electric & Mfg. Company
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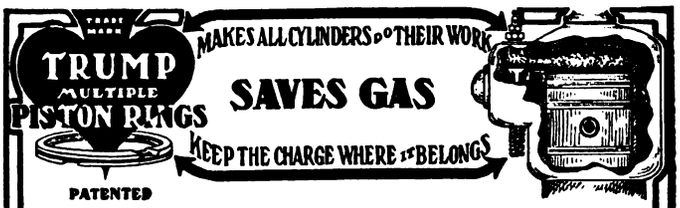

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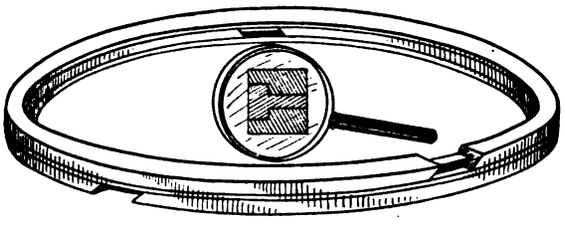
Will restore the original, or even more, power to the old engine. With them, all motors will have the highest efficiency at all times.



The construction of the three sections of Trump Multiple Piston Rings insures perfect cylinder compression. Equipped with them an engine will afford every quality that scientific engineering can obtain:

Greatest Power	Low Fuel Consumption
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Highest Efficiency	Greater Endurance
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No Smoke	Every Satisfaction

Trump Multiple Piston Rings will not break or wear unevenly. Will not wear the cylinders, and obviate re-boring. The installation is a simple work.

There is a size for every engine. The list price for most sizes is $1 the complete ring.

Write today for special booklet, giving detailed information and dealers' discounts.

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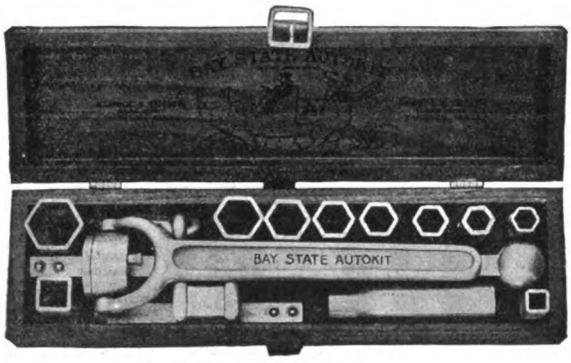
Auto Owners would demand the best if they knew how to discriminate, but they depend very largely on the advice of dealers.

If they don't know and don't buy the dealers are losing business and good profits. The best wrench set to be bought is the Autokit



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Sold everywhere, or direct, with the broadest of guarantee. Catalogue and price lists at request.

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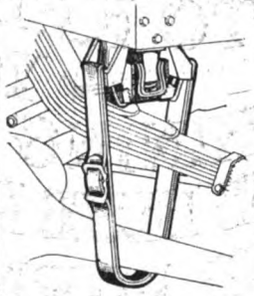
SHOCK ABSORBER
BEST IN THE WORLD



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Adjustable to all loads. Easy to attach. A wrench is the only tool necessary.

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Four-Cylinder Motor,
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Our selling policy and proposition is the most liberal ever offered to the trade.

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Chassis Price, $1,600

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Guard against this waste by attaching a

Schrader Automatic Inflating Valve

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Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from 1-4 in. to 5-8 in.

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Manufactured by

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Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

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Note: Escape of Air, Water, Steam, Etc.

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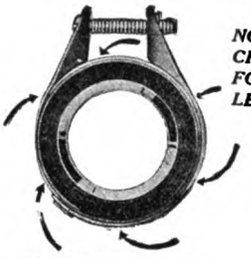

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The Only Clamp That Closes Perfectly Round Over a Hose

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They will not *Buckle* or cut the hose.

They can be slipped over a pipe, no matter in what position the pipe may be.

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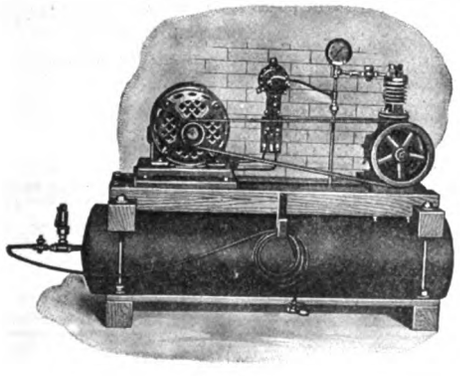

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A Gardner Outfit of this type installed in ***your*** garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

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Shipped anywhere in the United States charges prepaid, upon receipt of $5.00 per gallon can.

THE DENVER FORD STARTER COMPANY

Suite 327 Century Bldg. Denver, Colo.

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Positive Carburetion of Low Grade Gasoline Solved

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A postal will bring detailed information containing facts that will surprise and interest you.

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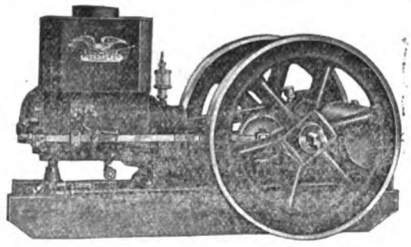
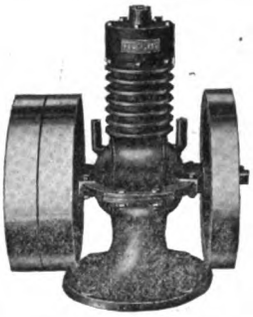
WILMO COMPANY 208 Fulton Street, CHICAGO, ILL.

BUY GUARANTEED AIR COMPRESSING OUTFITS

FAULTLESS AIR COMPRESSORS are designed for hard service in the garage or service station or shop. They are single 3x4" cylinder, single-acting, poppet valve, valve-in-the-head, air-cooled type, fully enclosed and splash lubricated. Will develop 200 pounds pressure constantly without overheating, and 300 pounds with safety; capacity about five cubic feet of free air at 300 r. p. m and more than 6¾ cubic feet at 400 revolutions. We produce complete systems, including tanks, pipes, valve connections, etc.



FAULTLESS ENGINES, STATIONARY OR PORTABLE, burning gasoline or,—with attachment—gas, kerosene or distillate. Eight sizes, single-cylinder heavy duty type, from 1¼ to 14 h. p., governed, with magneto ignition. Are mounted on skids or iron sub-base or on hand or horse trucks. Guaranteed for five years against defective parts, that they will produce 15 per cent. more than rated power, and sold with a try before you pay agreement.



Write today for air compressor and engine catalogues.

FAULTLESS ENGINE COMPANY, Kansas City, Missouri

Bunting Bearing Bronze IN Cored Bars

Bunting Bearing Metal is standard today with both Manufacturer and Repairman.

Is for sale by most any Jobber or can be purchased direct from us.

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approximate weight
A	1	½	12	2
B	1¼	½	12	3½
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

The Bunting Brass & Bronze Co.

727 Spencer Street Toledo, Ohio

Motor Truck Operation

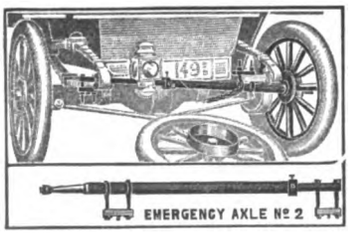
A book devoted to the design, construction, care, repair and maintenance of service vehicles. Non-technically written, dealing with every subject, it is an authority for owners, transportation department heads, superintendents, foremen and drivers. The most comprehensive treatise of the kind published.

Price, postpaid, $1.

Automobile Journal Publishing Co.

Times Building PAWTUCKET, R. I.

MR. GARAGE MAN.



Are you equipped to bring in a car with a broken axle shaft? If not, get one of Ekerns Emergency Axle No. 2, and you can bring in your customer's car when disabled with a broken axle shaft, or a locked differential. You can attach one of these axles to any make of car in five or 10 minutes, and the car can be pulled at any speed desired.

The Emergency Axle is made of seamless steel tubing provided with clips to go on any width of spring and it is adjustable in length. The spindle is made to take Ford front axle cones so a Ford front wheel and tire can be used, and these wheels can be picked up at most any garage. Try one and you will be equipped at all times to bring in your customer's car. Ekerns' Emergency Axle No. 2 weighs but 28 pounds. Dealers' net price, $8.50 f. o. b. Flandreau, S. D. Five per cent discount may be deducted if cash accompanies the order. We make shipment same day as order is received.

Manufactured by EKERN BROS. FLANDREAU, S. D.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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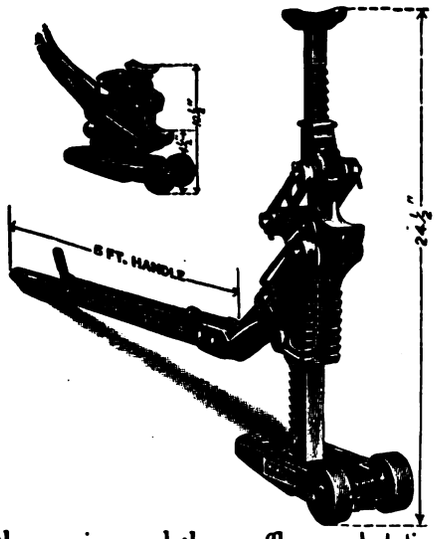
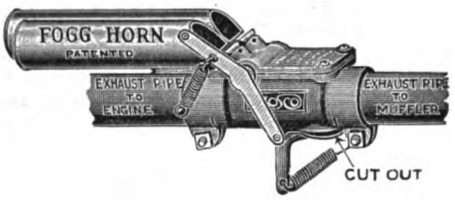
CHANGE IN OWNERSHIP

EXCEL AUTO JACK AND FOGG HORN



THE attention of the trade is respectfully directed to the fact that we have acquired the ownership of the EXCEL AUTO JACK and the FOGG HORN, until recently manufactured and marketed by the Motor Specialties Co. of Waltham, Mass. All orders and inquiries will be given our very best attention.



The FOGG HORN is generally admitted to be the best exhaust horn ever produced for Ford or Metz Cars. It is located between the engine and the muffler, and delivers a full, mellow signal at low engine speeds.

THE EXCEL AUTO JACK is a big, powerful tool for the rapid and easy handling of cars weighing up to 8000 pounds. It is the quickest and strongest Garage Jack made. Indispensable in Garages, Service Stations, Repair Shops, etc. Satisfaction guaranteed or money refunded. Write for quotations and Folder B.

THE RANDALL-FAICHNEY CO., Inc., MANUFACTURERS OF MOTOR SPECIALTIES **76 Atherton St.**

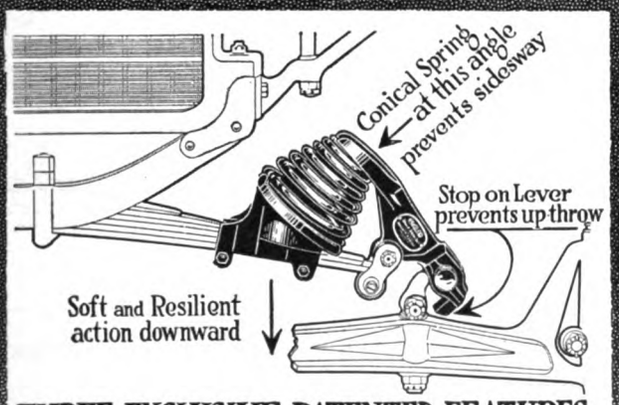
JAMAICA PLAIN, BOSTON, MASS.

Blitz Plugs. *B-Line Oil and Grease Guns.* *Jericho Horns.* *Glaroscopes.*

HASSLER

Shock Absorber

For FORD Cars



THREE EXCLUSIVE PATENTED FEATURES

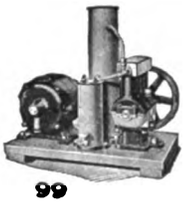
"Recognized as the Best"

— 100000 FORD OWNERS RECOMMEND IT —

WRITE FOR DEALERS TRIAL SET PROPOSITION

$15 for a Set of Four

Robert H. Hassler, Inc.
Indianapolis, Ind.



LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

FREE AIR SERVICE CURB STANDS

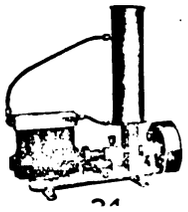
Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. *Save Money.*

LIPMAN AIR APPLIANCE CO.

199 Pleasant St., BELOIT, WIS.



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ELIMINATE THE BUMPS. CUT DOWN TIRE EXPENSE. DOUBLE THE PLEASURE OF MOTORING.

REDUCE MAINTENANCE COST AND DEPRECIATION.

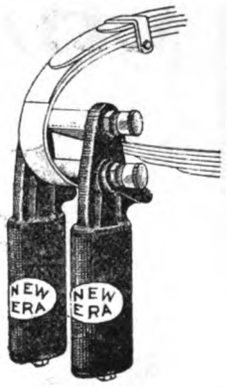
ALL THIS CAN BE DONE WITH

NEW ERA TWIN ELIPTIC SHOCK ABSORBERS

ALWAYS HANG STRAIGHT DOWN

Handsomely Finished **POPULAR PRICED---$12.00-$15.00** Guaranteed Permanent

There's a New Era Twin Eliptic for Your Car—Order by This Diagram:—

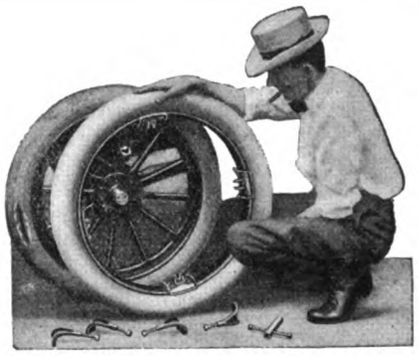


Model	No. 1	No. 2	No. 3	No. 4
Weight of Car	$12.00 to 2300	$12.50 from 2300 to 3000	$13.50 from 3000 to 3800	$15.00 from 3800 and up
Width of Spring	1¾" Special 2" & 2¼"	2" Special 1¾" & 2¼"	2" Special 1¾" & 2¼	2" Special 1¾" & 2¼"

Your dealer will get a set for you on a thirty day trial---if you ask him. Why be without a set another day?

NEW ERA SPRING AND SPECIALTY CO., 877 WOODWARD AVE. DETROIT, MICH.

If your dealer or jobber won't supply you, order from us.



METHOD OF MOUNTING

TWIN-RIM

Patented Feb., 1916

A DEMOUNTABLE RIM FOR

FORD CARS

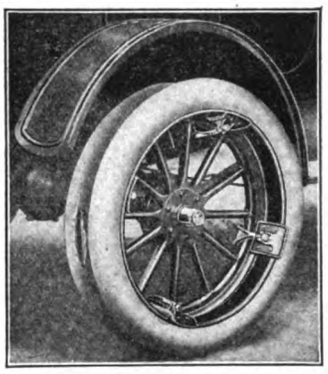
And All Other 30"x3½" or 30"x3" Clincher Rims

Thousands of Ford Car owners have equipped their cars with this invention and the universal verdict is: "They would not be without the TWIN-RIM."

YOU DON'T HAVE TO REMOVE DAMAGED TIRES

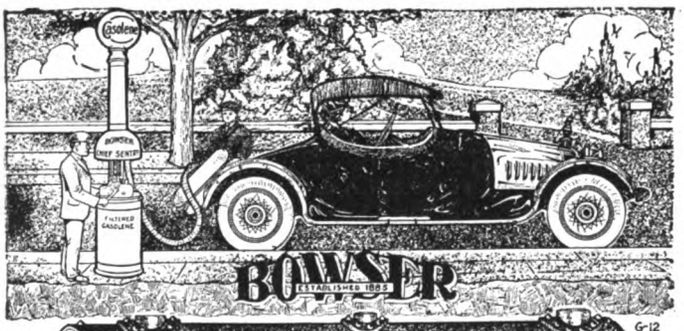
TWIN-RIM $5.00

DEALERS AND AGENTS WANTED



MOUNTED READY TO RUN

TWIN RIM CO., Inc., - - - - - - - 103 Massachusetts Avenue, Boston, Mass.



* BOW-SER SER-VICE * To think of one suggests the other

Garagemen

and other Retailers of Gasolene

Car owners for blocks around can be attracted to your place of business both day and night by the tall, brilliantly-colored electric-lighted

BOWSER Chief Sentry

Trade of this kind purchases not only gasolene, but oil, accessories and supplies. Put one of these silent salesmen to work in front of your garage.

The Chief Sentry pumps quickly and accurately 5 gallons of filtered gasolene at one stroke of the plunger. It pumps any intermediate gallon, half-gallon or quart. The indicator shows *exactly* how much gasolene has been drawn.

It is *double-locked*—pump being locked during business hours, cover locked when closed. Absolutely weather-proof. A handsome advertisement. For full information send for Bulletin No. 102.

We make storage tanks in all sizes for under or above ground and portable use with inside or outdoor pumps suitable for handling volatile or non-volatile fluids of any kind.

S. F. BOWSER & CO., Inc.

FORT WAYNE, INDIANA, U. S. A.

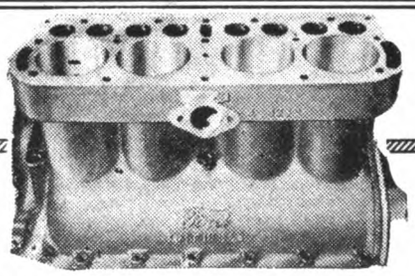
Automobile Mailing Lists 1916

28,108	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
8,123	Ford Dealers, price $17.50, or $3 per M by states.
285	Ford Dealers, Canada, $1.50.
28,463	Auto Garages, price $40, or $2.50 per M by states.
29,306	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
45,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
940	Auto Supply Jobbers, price $4 for the list.
4,093	Auto Tire Dealers, price $3 per M.
2,404,150	Auto Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.
643,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

Write for particulars of any list you want.

A. F. WILLIAMS, Manager,

Phone Franklin 1182. 164 West Adams St., CHICAGO



CYLINDER BORING

AUTO, MOTORCYCLE, STATIONARY AND TRACTOR ENGINE CYLINDERS REBORED

Write for prices *Special offer to dealers*

Motorcycle Accessories Company

ST. PAUL, MINN.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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FACTS ABOUT USED **ELECTRIC DRILLS**

With a Guarantee at 25% to 30% Less

Drill Service

In these days of progress ***Service*** is the one important factor. Service to your customer is 75% of your success. Don't be without the necessary tools to hold up this most important end of your business. Our tools are service tools, always ready to respond to the call of the operator. Rebuilt by experts and guaranteed to give real Electric Drill Service.

A Dollar Saved Is a Dollar Earned

Saving a dollar is not an easy matter, but it can be done by the man who is willing and will try. Here are some undisputed facts about saving dollars: Suppose you are drilling a hole in the frame of a Ford to attach a foot throttle. Your man gets down on his back with a brace and bit, spends 30 minutes of strenuous work to drill a hole that could have been drilled in three minutes. At a dollar an hour, you charge your customer 45 cents too much. He says you are a robber, and you lose his trade. Besides, your man has only drilled one hole when he could have drilled ten holes. No, it doesn't pay to be near sighted. ***Buy a drill now and be ready to give service.***

Grinder Dope

The lathe grinder has come greatly into use by the repair man of today for trueing up valves. How often do you try to turn a valve stem and after two or three hours of time wasted you realize that it is too hard and you will have to buy a new one. And oftentimes a hardened gear fits a little too tight. All you have to do in either case is to stick your grinder up in the lathe and she'll do the rest.

Electric Motors

We carry a large line of used Electric Motors which we guarantee and can offer you at 25% to 35% less than new ones. These are all modern and up-to-date motors.

Our Repair Shop

We employ only expert electrical men in our repair shop and are prepared to repair any kind of electrical machinery at less cost than it can be done by the manufacturer.

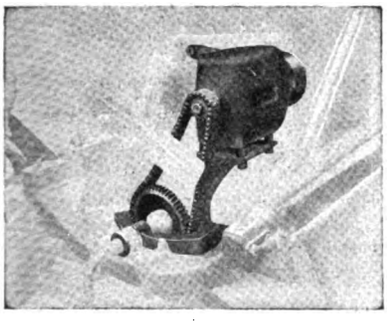
GET OUR PRICES

St. Louis Portable Tool Co.

1320 Cass Ave., St. Louis Mo.

Be sure to state current available in your reply.

ELECTRIC **ISCO** SYSTEM



Electric Starting and Lighting Systems for FORDS $75

IT SPINS THE MOTOR

There is ALWAYS a start in the Disco, no matter how cold the day. It doesn't merely turn the motor, it SPINS it.

The Disco is a single unit system, simple, light and compact. It operates with a 12-volt current, insuring a start every time. Its patent yoke bracket maintains perfect alignment and eliminates chain breakage. It is easily accessible, and does not interfere with the accessibility of the Ford engine.

Eighteen American cars are using the Disco as regular equipment. We have a proposition to make to owners, dealers, jobbers and manufacturers. Early requests for territory will be given preference.

Write or Wire Today

Disco Electric Starter Corporation

DETROIT, U. S. A.

Harvey RACINE **Boltless Auto Springs**

Are Guaranteed

Against All Defects

Our broad guarantee not only covers center breakage but the entire spring—through and through and from end to end. If it is defective ***at any point*** we will replace it.

There's a Harvey Boltless Auto Spring for every make and model of car. Over 10,000 springs carried in stock at factory for quick shipment. Harvey Springs are also carried in stock at nearly half a hundred jobbing centers. Write us for name of your nearest jobber.

FREE Every Dealer, Garageman and Repairman should write for the Harvey Auto Spring Book which contains a complete list of springs for all the leading makes and models of cars. Gives sizes, weights, measurements, prices, etc. ***Mailed Free.***

THE HARVEY SPRING CO.

851 17th Street Racine, Wisconsin

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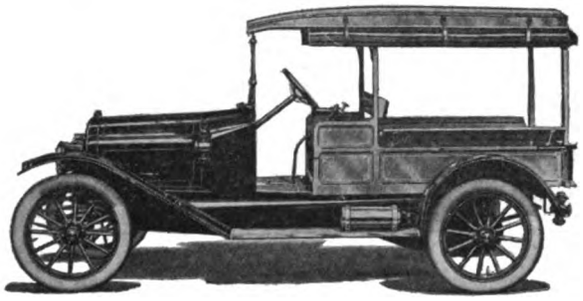
METZ
Commercial Cars



MEET every requirement of the business man who wants rapid, efficient and economical delivery, and they are sold for prices that are not more than the cost of animal equipment having but 33 per cent. efficiency and no reserve.

METZ delivery cars are not experimental. They have been amply proven. As a business proposition for a dealer they have the same attraction they have for those desiring transportation---they will serve the purposes of more than half the number having haulage needs.

These machines can be sold with practically all other makes, because there is a distinct market for them in every community. The remarkable economy, high efficiency and great endurance of METZ commercial vehicles means continuous and increasing business. There are practically no limitations to possibilities.

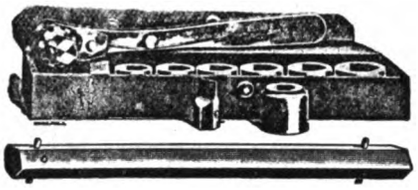
There is one type of METZ chassis—1000 pounds load capacity. With open express body this is Model A, price $500. The same vehicle with electric lighting and starting is Model B, price $550. With covered express body it is Model C, price $525. With electric starting and lighting it is Model D, price $575. With full panel body and electric equipment it is Model E, price $600.

METZ dealers benefit by national advertising and intensive co-operation.

Write today for detail of agency contract. It is the best opportunity of the industry.

The METZ COMPANY

WALTHAM Address Dept. F **MASS.**



DON'T USE A COLD CHISEL

USE THE LANE UNIQUE RATCHET WRENCH

FOR CLOSE AND DIFFICULT WORK

IT TURNS NUTS VERY CLOSE TO THE WALL.

is easily and quickly reversed, sockets will not break or split and fits three standards and automobile nuts.

MADE FOR HEAVY SERVICE

Wrench is machine made. Sockets are turned from steel bars, cold broached and case hardened. Fully warranted. Every repairman should have a UNIQUE RATCHET WRENCH SET.

SPECIAL SETS FOR FORD CARS

Dealers, Jobbers and Garagemen, Write for Trade Discounts.

STANDARD SET Contains:
1 Handle 7 inches in length.
2 Screw driver bits.
7 Sockets to fit semi-finished hex. nuts as follows:
U. S. Standards from 1-4 in. to 1-2 in
A. L. A. M. Standards from 5-16 in. to 11-16 in
Cap screw heads from 5-16 in. to 5-8 in.
Price in leather case $2.50.

THE FORD SET Contains:
1 Handle 7 inches in length.
2 Screw-driver bits.
1 Extension bar 7 in. in length.
SIX SOCKETS to fit all nuts and bolt heads on Ford car, including the cylinder head.
Price in leather case $3.00.
Sold by dealers everywhere.

WILL B. LANE, Manufacturer, 180 N. Dearborn Street, Chicago, Ill.

You can make anywhere from $1500 to $3000 a year above expenses. Your investment to start is small, returns are quick and income cash. Profits are large on every job. The Tire repair business is growing every year. Every city and town offers opportunity for you. Buy only an

AKRON-WILLIAMS TIRE REPAIR EQUIPMENT

The better your equipment, the better your work and the greater your volume of business. Start right. Use equipment which is

Endorsed by 30 Leading Tire Manufacturers We are making an unusual offer to everybody who buys our equipment. You can become a tire repair expert by our plan.

SEND FOR OUR 30 DAY SCHOOL PLAN

You start right. No experimenting. No failures. You become a practical, first-class repair man.

SEND FOR CATALOG NO. 12

WILLIAMS FOUNDRY & MACHINE COMPANY
ASH STREET, AKRON, OHIO

WATERHOUSE & LESTER CO.
Exclusive California Distributors, San Francisco and Los Angeles

SUBSCRIBE FOR

The Automobile Journal

A Magazine for Car Owners

24 Issues——$1.50 the Year

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Resta

Again They Win!

DIXON'S

Graphite Automobile

LUBRICANTS

Won the sixth annual Indianapolis race and the Chicago Derby Race.

While the cars whirled around the tracks at a dizzy pace Graphite waged a fight against Friction and won. Friction laid low while speed records were being made.

Slowly, but surely, Friction is slyly taking its toll from your car. The only way to protect the bearings and gears from wear is to have them Dixonized.

Send for booklet No. 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

Established 1827

G-157

Wayne

CURB PUMPS

Have won the popular favor of posted motorists

BECAUSE

They appreciate pure, clean gas, quick service and the exclusive Wayne Clock-Dial Register that shows exactly how much gas they are getting.

Send for our circulars and easy-terms proposition.

WAYNE OIL TANK & PUMP CO.

2 Canal Street **Ft. Wayne, Indiana**

THIS AMBU BATTERY BOOK—GET IT!

An authoritative work on upkeep, care and repair of electric storage batteries—

"Starting and Lighting Batteries"

NOW READY

Every repair, garage and service station man needs it.

Send today---$1.00 for Your Copy

Published by

AMERICAN BUREAU OF ENGINEERING, Inc.

Makers

AMBU Electric Trouble Shooter

1018-1028 So. Wabash Avenue **CHICAGO, ILL.**

"NORMA"

BALL BEARINGS

(PATENTED)

The real value of any machine is determined by its weakest part—not by its strongest part. A failure is a failure—no matter in what part it occurs—and condemns the judgment and may reflect upon the honesty of every one, from chief engineer down, who has had anything to do with the particular part that fails.

In ignition apparatus, lighting generators and starting motors, no part is more vitally important, and no part so small and inconspicuous, as the bearings. Yet the best makers have safe-guarded their reputations at this point by using "NORMA" Ball Bearings.

Are You "NORMA"-Wise?

THE NORMA COMPANY OF AMERICA

1790 BROADWAY —— NEW YORK

BALL, ROLLER, THRUST AND COMBINATION BEARINGS

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Roller Bearings
SERVICE BRANCHES
ATLANTA-DETROIT-BOSTON-SAN FRANCISCO-NEW YORK-LOS ANGELES-CHICAGO-MINNEAPOLIS-LONDON, ENG.

DEALERS—This Talk is Just for You

Send for a sample order. We make one price to all—the lowest.

Circulars and discount sheets on request.

You can save dollars and add to your prosperity by selling the Martin line of tire covers, water buckets, inner tube cases and similar goods.

These are made of heavy imitation leather. (Not of cheap oil cloth). They are the kind and quality that will please and satisfy the customer.

These values, for the price, are phenomenal.

For instance we make a price to you of 85 cents for our style D 34 by 4 tire cover for special hangers and wire wheels.

Our price to you for inner tube cases for single tubes is $8 per 100. They are of good quality water proof materials.

Prices and quality are what interest you. They show the live dealer where to buy to earn the big and easy profits.

We will quote you prices as low as those mentioned on our complete line. If you buy from us it will make 1916 a prosperous year for you.

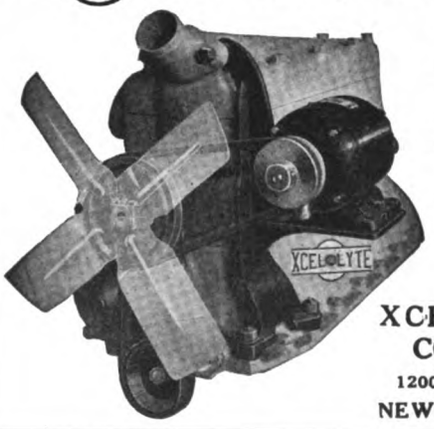
Orders are not accepted from owners. These prices are exclusively for the trade.

THE MARTIN MFG. CO., Lancaster, Ohio

HESS-BRIGHT
BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
The HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA PENNSYLVANIA U S A

XCEL-O-LYTE

LIGHTING SYSTEMS
FORD, OVERLAND



An Exclusive Territory Proposition Open to Dealers.

Ball bearing dynamo, 6-80 storage battery, double-bulb headlamps, tail lamps, dash lamps, automatic cut-out, switch, bracket, driving transmission included in this high grade equipment.

Write for Agency Terms.

XCEL-O-LYTE COMPANY
1200 Xcelo Building
NEWTON, IOWA

THE AUTOMOBILE JOURNAL

Is the oldest Automobile magazine published in America devoted wholly to owners of pleasure cars.

A quality magazine with prestige and circulation that brings results to advertisers.

TIMES BUILDING - - - - PAWTUCKET, R. I.

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Here's What You Need in Your Garage or Repair Shop

because it is an all around machine and has features that make it a necessary tool for your line of work.

The "Whitney" Hand Miller

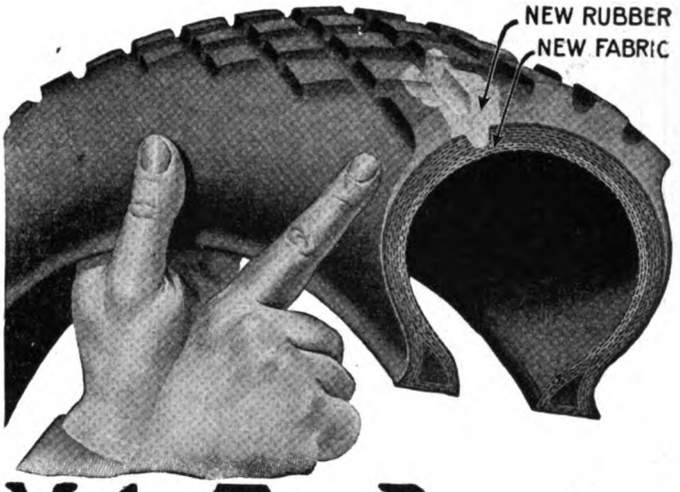
will cut gears, cams, sprockets, do key seating, profiling, slotting, slabbing, straddle milling, and hundreds of other operations.

Our Universal Milling Attachment permits the use of end mills and makes the machine desirable for drilling and all classes of milling, where small cutters and high speeds are necessary.

Simply Drop a Postal for Catalog No. 3.

The Whitney Mfg. Co., Hartford, Conn.

CHAINS KEYS HAND MILLING MACHINES



Make Tire Repairs like this—*Easily*

COMPARE this blowout repair made by the Shaler Wrapped Tread method with the usual unsightly repairs on a non-skid tire. It is easier to make Wrapped Tread repairs like this than to put in sections. It requires only half as much material and half the time for preparation and curing. It makes a stronger job than any other method.

These are some of the reasons why Shaler Shop Vulcanizers, using the Wrapped Tread Method and with their temperature regulated automatically, have been adopted by leading tire and car manufacturers, by the United States and other Governments—are sold by practically every auto supply house in this country.

Big Money in Tire Repair Work with a

SHALER Shop Vulcanizer

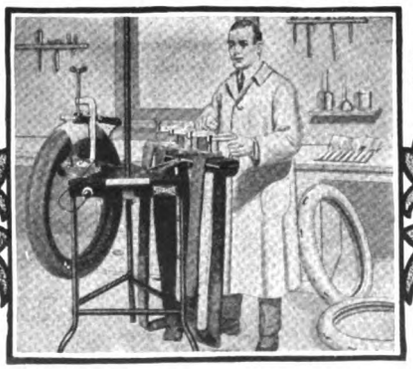
The increased price of tires has increased the demand for tire repairs. With a Shaler Plant you can get the profits on the business your customers are forced to take somewhere. By using the efficient Shaler Method you can make better repairs at less cost than your competitor who has an old style outfit. Either you can make more profit or do repairs so cheaply as to get practically all the work in your community—and outside work, too.

Write for Free Catalog

Which shows the only complete line of tire vulcanizers in the world—from a $1 75 kit for the motorist to carry in his tool-box to complete plants that will turn out two hundred tubes and a dozen casings daily.

C. A. Shaler Co., 261 Fourth St., Waupun, Wis.

$60 Electric or Steam



Subject to Trade Discount

NEW DEPARTURE BALL BEARINGS

American Made FOR American Trade

QUALITY FIRST

THE NEW DEPARTURE MANUFACTURING CO. CONRAD PATENTS LICENSEE BRISTOL, CONN., U. S. A.

Commercial Body for Ford Cars—Double-Braced—Reinforced

$32.50

F. O. B. Detroit

FINISHED and PAINTED COMPLETE

Body No. 1—Three-quarter rear view—full panel delivery body. Loading space 44 in. wide x 54 in. long x 56 in. high.

ORDER TODAY. All orders given immediate attention.

Weather-proof, serviceable and ready for immediate shipment knocked down and crated. Sold on account of BIG REMOVAL SALE

WADSWORTH MANUFACTURING CO.

1259 Jefferson Ave., Detroit, Mich.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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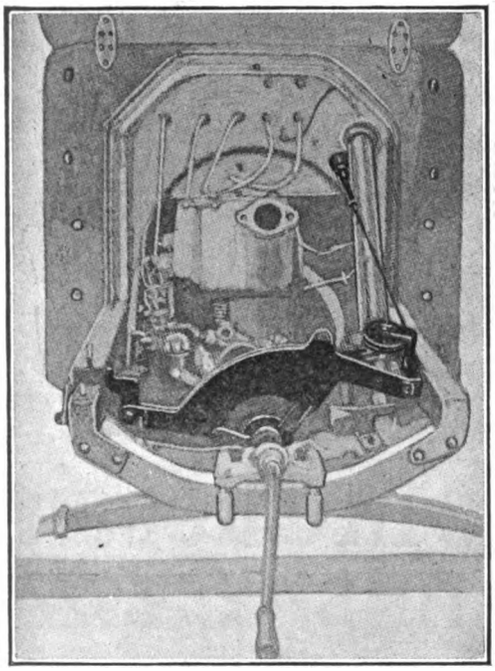
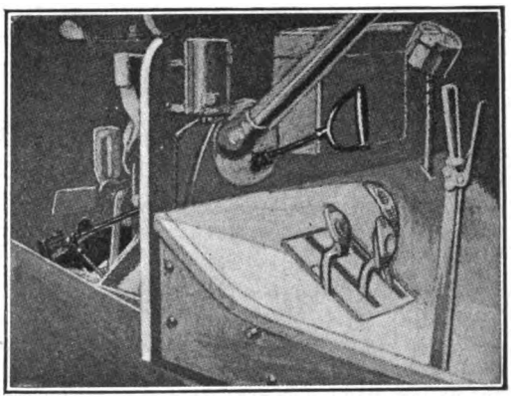


The Denver Starter For Ford Cars

Is Just the thing to put on your Ford and Metz autos.

Entirely concealed—guaranteed to turn your engine over—light, only weighs eight pounds—simple, any mechanic can put it on—positive in its action. Does not disfigure your car in any way — neither the crank or any other working part of your machine is interfered with—no ratchets—no cogs — no friction — automatically releases on back fire — no danger. This starter complete delivered, charges prepaid, anywhere in the United States, for only $7.50.



THE DENVER FORD STARTER CO.
327 Century Building, Denver, Colo.

Gentlemen:

Please find inclosed $7.50 for which please send me one of your starters for Ford or Metz Cars, charges to be prepaid by you, with full instructions for putting same on.

Name.....

Street Number.....

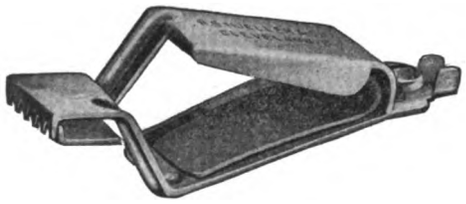
City or Town..... State.....

Durable! Efficient! Economical!
Try It! You'll Like It!

The Denver Ford Starter Co.

327 Century Bldg., Denver, Colo.

Time Savers
For Charging Storage Batteries



HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.

Made of steel—lead plated—may be used over and over again.

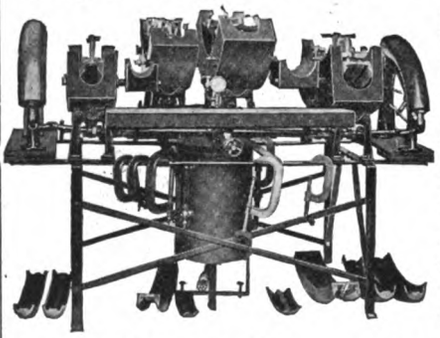
No. 13-A—¾" spread of jaws.
No. 16-A—1½" spread of jaws.

Your money back without quibble if not entirely satisfied.

Single Lots, Each 15c Lots of 10, Each 12 1-2c Lots of 100, Each 10c

R. S. MUELLER & CO., 431 High Ave,, S. E., Cleveland, Ohio.

Big Money Double Treading



Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch inclusive.

VANDERPOOL CO., Springfield, Ohio
and 1044 S. Main Street, Los Angeles, Cal.

STANDARD
FOR CHEVROLET "490"

Built on the tried and true centrifugal system which does not alter. Hand steady as a rock at all speeds.

Handsome nickel flush mounting makes it an ornament to your car.

Guaranteed country-wide service assures your lasting satisfaction.

$15 *DEALERS write for proposition.*

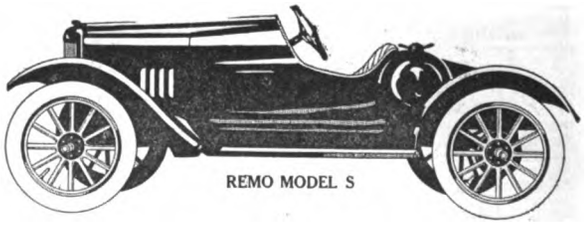
73-18

STANDARD THERMOMETER CO.

65 Shirley Street Boston, Mass.

Remo Bodies for Ford Chassis

The REMO raceabout bodies are distinctive, highly attractive, finely made, give class and are comfortable.



REMO MODEL S

Some bodies may cost more, but none could be better. Four tried and proven models.

DEALERS: Investigate the Remo line. Prices and discounts will interest you. Fast sellers. Just what the Ford owners want and are buying.

Send To day for Latest Catalogue and Discount Sheets

AUTO REMODELLING CO., 1509 So Michigan Ave. CHICAGO, ILL.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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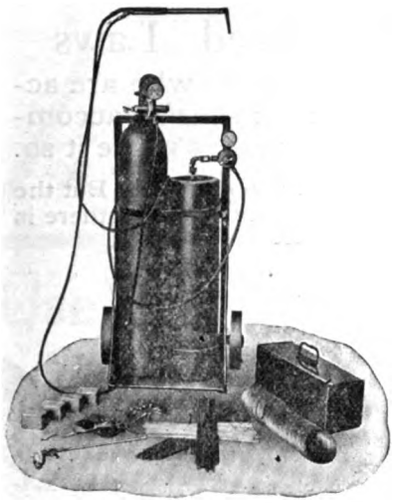
GARAGE EQUIPMENT WITH MERIT

PROFIT MAKERS FOR THE REPAIRMAN



Style A Welding and Carbon Removing Outfit With Truck (Tanks Not Included)

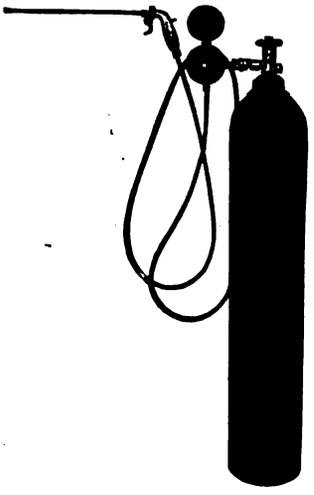
WELDING and
Carbon Removing Outfits

That are Standard in the Trade

DIFFERENT SIZES AND PRICES
LEAD BURNING
ACETYLENE BRAZING
GAS PREHEATING
STEEL CUTTING APPARATUS

Reasonable in Price
Economical in Operation
Simple in Design

EVERY OUTFIT GUARANTEED

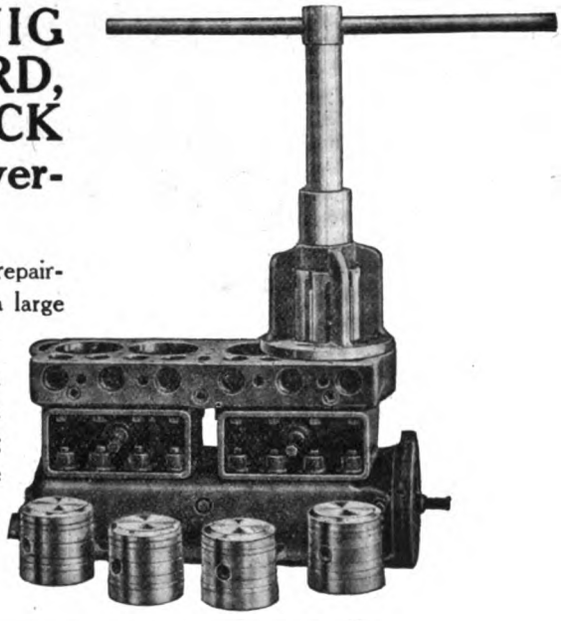


Style A Carbon Removing Outfit (Tank Not Included)

REAMER and JIG for reboring FORD, METZ, and BUICK cylinders 1-32" oversize.

A tool that will widen the field of the repairman, insure big profits and add a large number of satisfied customers.

The engine is the vital part of an automobile and reboring 1-32 of an inch with this Reamer and fitting new pistons and rings makes the motor run better than when new.



Pistons for the FORD

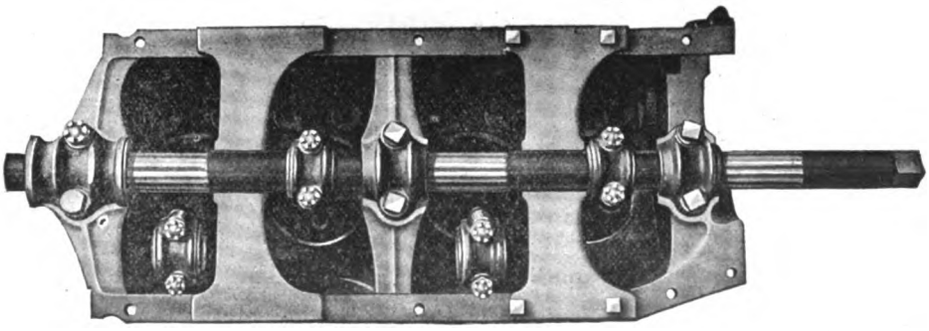
STANDARD and OVERSIZE GROUND FINISH

Complete $1.00 Each.

REAMER For FORD

Connecting Rod and Main Bearing

Two adjustable guides to line bearings perfectly true are furnished with each tool.



This tool does away with the tedious method of scraping the bearings by hand, and with it can be done much more accurate work. Connecting rods are made to line perfectly with the cylinders.

WRITE FOR GENERAL CATALOGUE AND PRICES

THE G. H. DYER CO., Cambridge, Mass.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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The Standard Spark Plug of America

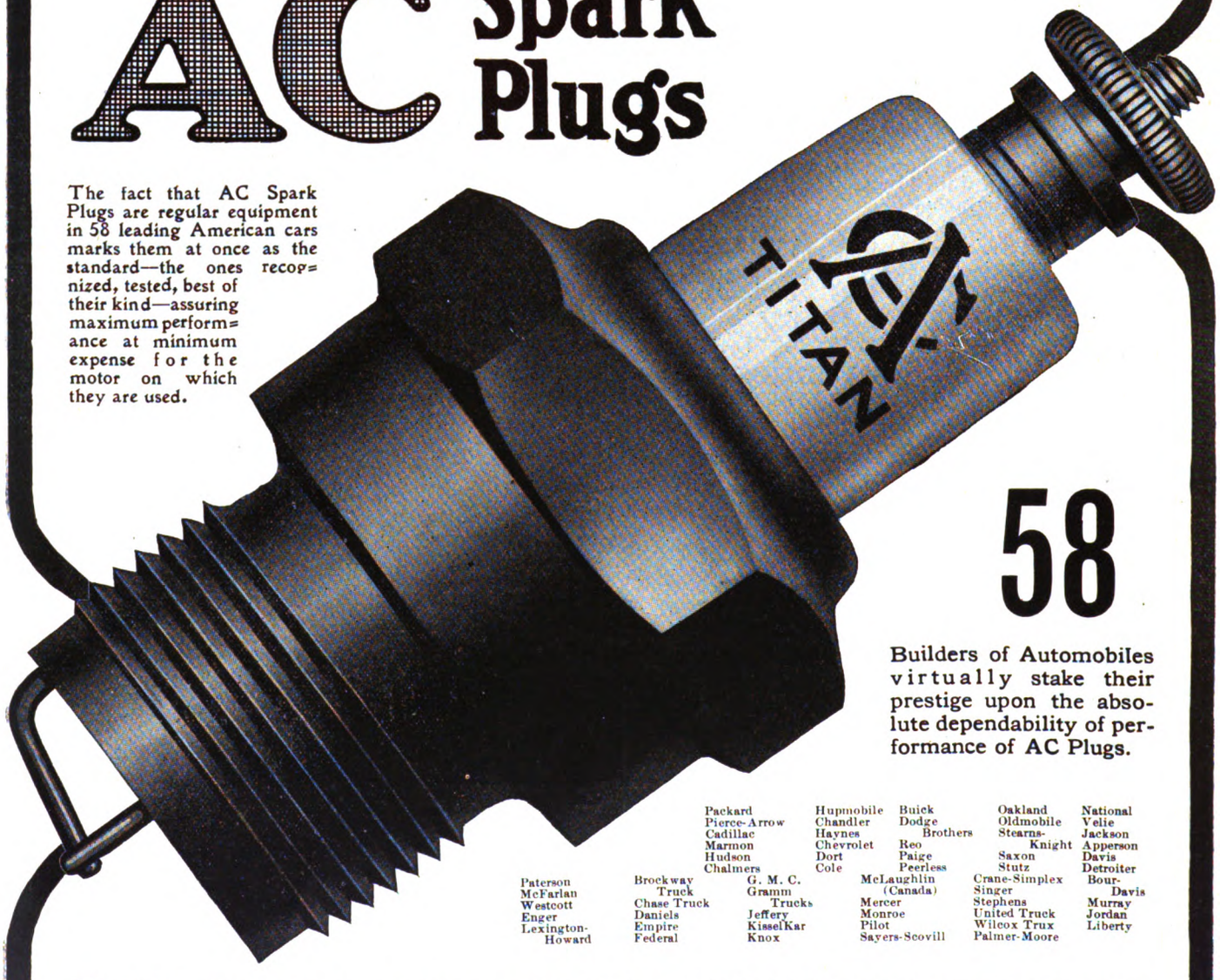
Automobile Advancement Defies All Speed Laws

Pessimists who said "it can't be done" are pushed aside by optimists who are actually "doing it." The AC---the one Standard Spark Plug of America---is an accomplished fact. The Champion Ignition Company, of Flint, Michigan, has made it so.

You may buy plugs which cost but little---you may buy plugs which are really good plugs. But the combining of maximum efficiency at minimum cost in a single plug is such a task that today there is only one single make of plug wherein the feat is actually accomplished. That---

AC Spark Plugs

The fact that AC Spark Plugs are regular equipment in 58 leading American cars marks them at once as the standard—the ones recognized, tested, best of their kind—assuring maximum performance at minimum expense for the motor on which they are used.



58

Builders of Automobiles virtually stake their prestige upon the absolute dependability of performance of AC Plugs.

Packard, Pierce-Arrow, Cadillac, Marmon, Hudson, Chalmers, Hupmobile, Chandler, Haynes, Chevrolet, Dort, Cole, Buick, Dodge Brothers, Reo, Paige, Peerless, Oakland, Oldmobile, Stearns-Knight, Saxon, Stutz, National, Velie, Jackson, Apperson, Davis, Detroiter, Bour-Davis, Murray, Jordan, Liberty, Paterson, McFarlan, Westcott, Enger, Lexington-Howard, Brockway Truck, Chase Truck, Daniels, Empire, Federal, G. M. C. Gramm Trucks, Jeffery, KisselKar, Knox, McLaughlin (Canada), Mercer, Monroe, Pilot, Sayers-Scovill, Crane-Simplex, Singer, Stephens, United Truck, Wilcox Trux, Palmer-Moore

We also make a special spark plug for Ford, Overland and Studebaker cars that insures the highest efficiency for these motors. You cannot make any mistake by choosing the standard plug of America ---used and overwhelmingly endorsed by these leading manufacturers. There's a difference---it will be appreciated by car owners.

CHAMPION IGNITION COMPANY

Flint, Michigan

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"Use Water for Washing; O-So-Ezy for Polishing"

Your customers have the highest regard for your advice, and expect you to give them the best advantage of your expert judgment.

O-So-Ezy Cedar Oil Polish is the fit medium for you to cement even closer this regard and friendship.

Once Over with O-So-Ezy

You can tell them with confidence that one application of O-So-Ezy will bring out and emphasize every bit of gloss and luster possessed by any painted, varnished or enameled surface. The unanimous commendation of the automobile industry bears you out in this statement.

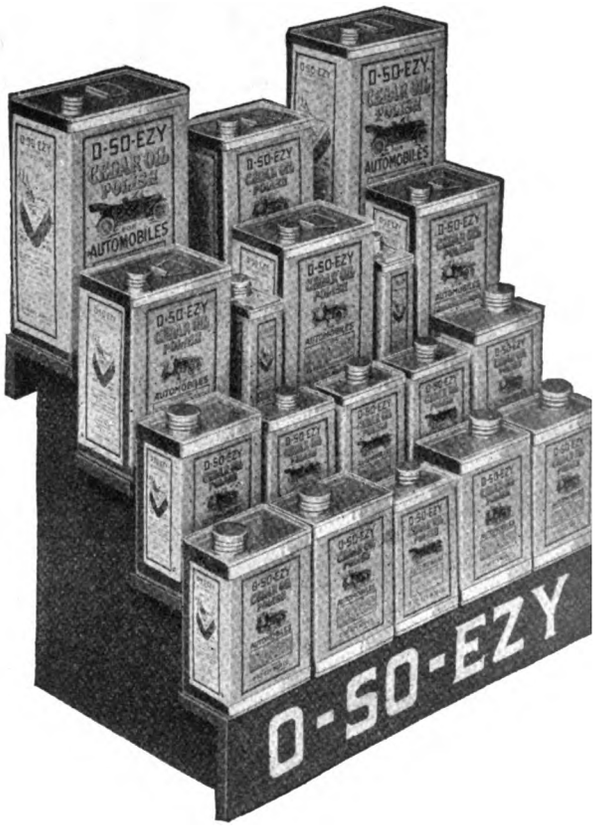
O-So-Ezy is not an automobile wash; that function can be performed only with water. Warn your customers against rubbing over grit; that is the only necessary admonition.

Here is your Opportunity

The accompanying photograph shows the ideal polish stock with free Silent Salesman, which we are holding for your order.

A sensible, widely advertised article endorsed by unqualified authority and staged in a way that will ornament any store or salesroom—that is the O-So-Ezy story.

We will fill your order direct or through your jobber.



O-So-Ezy Cedar Oil Polish is recommended and supplied as Standard Equipment of each new car by

Abbott-Detroit	Inter-State
Briscoe	Jeffery
Buick	Maxwell
Chalmers	Oakland
Chevrolet	Oldsmobile
Detroit Electric	Overland
Detroiter	Paige-Detroit
Dixie	Reo
Empire	Saxon
Grant	Scripps-Booth
H. A. Lozier	Stutz
Haynes	Willys-Knight
Hupmobile	Winton

6 Pints . .	each	$ .50	$3.00
6 Quarts . .	each	1.00	6.00
4 Half Gallons,	each	1.50	6.00
2 Gallons . .	each	2.50	5.00
Total . .			$20.00

ALL FOR **$12.00** AND WE PAY THE FREIGHT

HANDSOME MAHOGANY-FINISHED "SILENT SALESMAN" DISPLAY STAND *FREE.*

O-SO-EZY PRODUCTS COMPANY

264-266-268 Jefferson Ave., DETROIT, MICHIGAN

Pacific Representatives

The Phil. B. Bekeart Co., San Francisco

Gold Medal—Highest Award—Panama-Pacific Exposition, 1915

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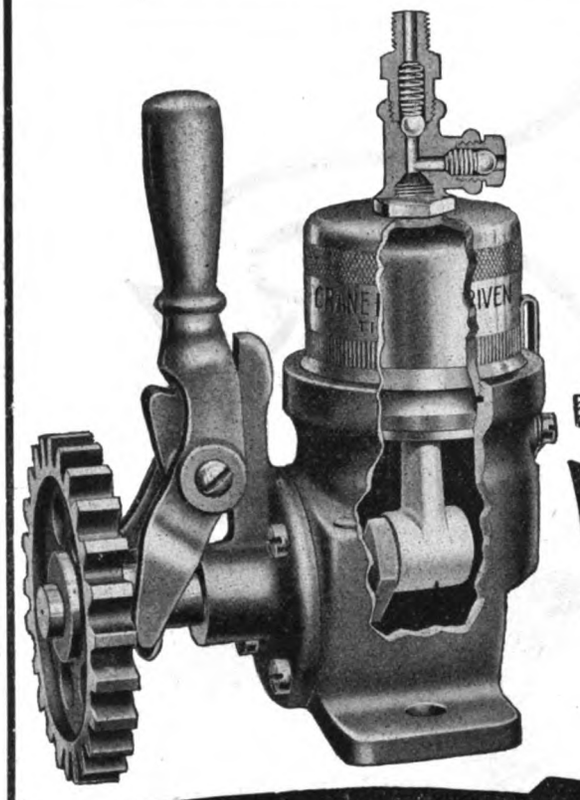


MOTOR DRIVEN

Crane PATENTED

TIRE PUMP

IS THE

Best Tire Pump Made

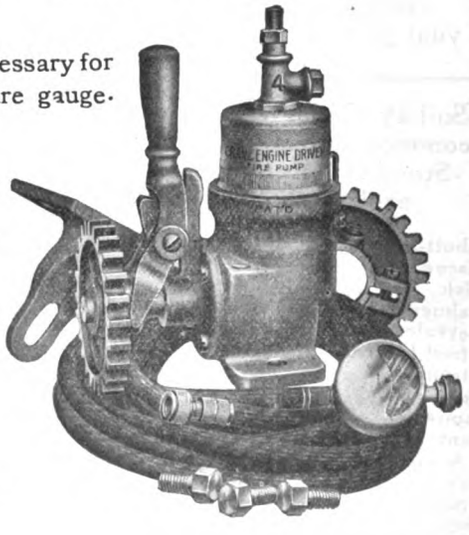
The ring that will revolutionize the Pump industry.

It is an equipment that is absolutely necessary and the price is within the reach of every car owner. By the use of a special alloy metal packing ring pumpage of oil is insured against. This is an exclusive feature of Crane pumps.

It can be fitted to any car, adjustable brackets and bolts already in the engines being used for installation. No fitting work of any kind is necessary. Any owner can install a pump quickly with ordinary hand tools.

It is practically indestructible, is extremely efficient, is compact and light, and is built of materials that insures a service life longer than the car.

LIST PRICE $8 which includes everything necessary for installation, hose and pressure gauge.



JOBBERS AND DEALERS

This is an accessory that is used constantly and sells without regard to season and is sold with a guarantee of complete satisfaction or money refund. Our selling proposition is extraordinarily attractive. Be a Crane dealer and sell the equipment that does not pump oil as well as air.

Trade terms and descriptive literature at request.

BAY STATE PUMP COMPANY

275 Congress Street *Boston, Mass.*

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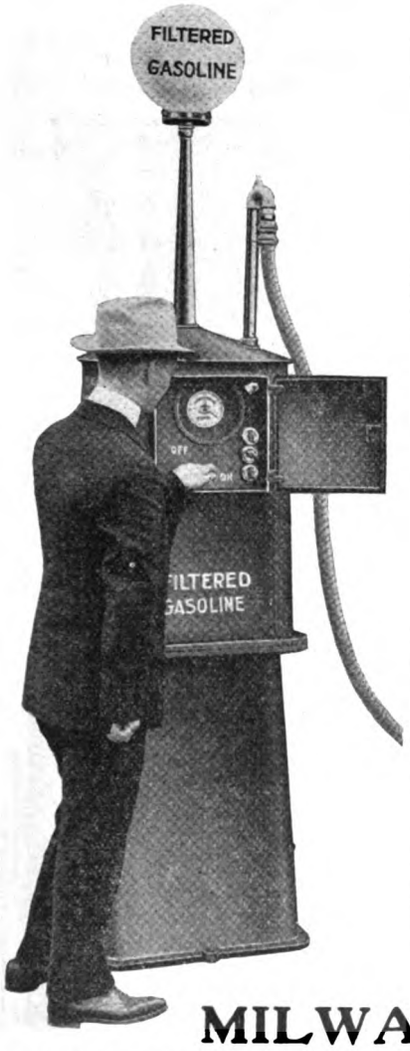
THE MASTER ELECTRIC FILLING STATION

(AUTOMATIC)

IS ALL THE NAME IMPLIES



MASTER ELECTRIC FILLING STATIONS, attract and *hold* the big majority of the trade in hundreds of places where they are installed. One of these Handsome Stations in front of YOUR establishment will make your place a Headquarters, and will boost your gasoline, oil and supply business as nothing else can.

The Big Dial shows the motorist exactly what he gets. He also gets service that commands his respect. It pleases him to see the attendant press a button and discharge gas at 25 gallons a minute down to a mere drizzle, at will.

The Master Electric Station is a marvel of durability, simplicity and dependability. There is nothing that can easily get out of order; it is always ready. Current costs about four cents per thousand gallons pumped. It is connected the same as any hand pump, with electric light, and can even be operated by hand in emergency.

The cost is no more than a good five-gallon hand pump, and one owner writes that he would not swap his Master Station for a dozen of the best hand pumps made.

Many large Oil Jobbers have adopted Milwaukee Master Electrics as standard equipment because, as one of them says, it is to the hand pump as the automobile is to the ox cart.

You need this wonderful Business Getter, Time and Money Saver. Write today for our liberal offer. Master Electrics are sold with Milwaukee "Kant-Leek" Underground Tanks, or without, as desired. Better write today before some enterprising competitor on the next square gets in ahead of you.

MILWAUKEE TANK WORKS

151-201 BECKER STREET **MILWAUKEE, WIS.**

Manufacturers of 22 Types of Gasoline and Oil Tanks and Pumps.

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THE THREE BIG FACTORS
QUALITY—PRICE—DELIVERY

Up to the Jobber and Dealer

Scarcity of material, lack of equipment, limited production facilities, factories working to capacity, shortage of experienced workers, are conditions prevailing with all industries.

The results are extremely high prices, inferior quality and delayed delivery, no matter what the need.

We are the largest manufacturers of metal specialties in America. We have abundant material, produce but one quality—the best—make quick deliveries, and the prices cannot be met by competitors. Our products are guaranteed. They are sold by thousands of jobbers and dealers throughout the world.

If you pay the high prices and get poorer quality you are losing business and making less profits.

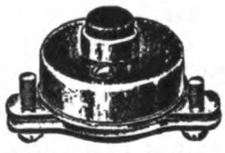
Our regular stock products include Electric Driven Motor Horns, Electric Vibrator Horns, Mechanical Horns, Motorcycle Horns, Copper-Asbestos Gaskets, Auto and Motor Boat Push Buttons, Shims and Shim Stock, Washers and Stampings, Spring Battery Connectors, Gasket Sets for Ford Cars, Ford Electric Lighting Outfits, Ignition Wiring Assemblies, Hard Rubber Switches, Wire Terminals, Brass and Steel Shim Stock and Hose Bands.

If you want the warning signal business in your territory, sell CLERO HORNS. There is a size and type for every service. This is a business opportunity that will surprise and interest you.

Write for discount sheets and catalogue describing our special assortments for garages and repair and machine shops.

METAL SPECIALTIES

Ford Car Lighting Outfit

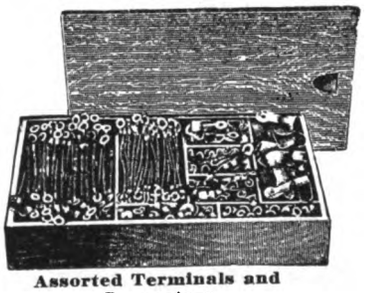


Electric Push Button

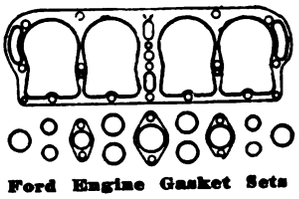
The Highest Grade, Lowest Priced Mechanical Horn Made.

Clero Horns

A Size and Model for Every Vehicle.

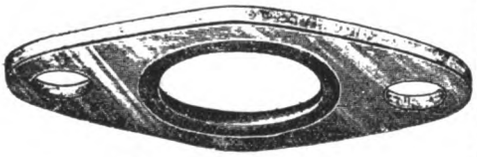


Assorted Terminals and Connectors

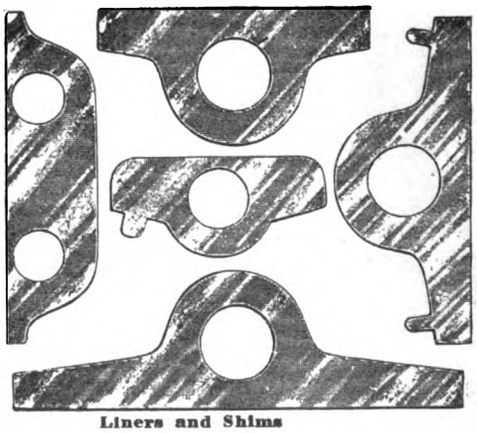


Ford Engine Gasket Sets

Assorted Shim Stock

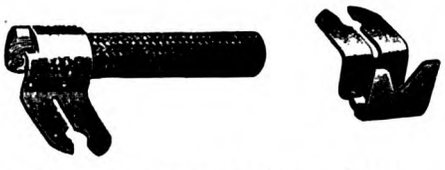


Exhaust Flange Gasket



Liners and Shims

Perfection Spring Battery Connector



Copper and Brass Cable Terminals

METAL SPECIALTIES

FITZGERALD MFG. CO., TORRINGTON, CONN.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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9,666,600 TIRES

Every one of the 2,000,000 or more cars in operation have four tires---to be kept properly inflated. Thousands of owners won't pump up their own tires. Thousands of these cars are in public garages.

All these millions of tires can be best inflated to the proper pressure and kept so with

MASTER GARAGE PUMPS

FOR INFLATING AUTOMOBILE TIRES

Private garage owners need Model P.
The larger and small public garages need Model W.

The almost universal demand for time and labor savers on cars and in garages should instantly impress you with the fact that these substantial, efficient pumps are a real necessity---the invention and product of this well-known, old-established concern. Our reputation and manufacturing ability are behind every pump which leaves our plant---with this broad guarantee:

"We guarantee Master Garage Pumps for one year against defects of material or workmanship. With ordinary care and usage they should last ten years."

Four models---each applicable to a particular kind of work.
We will gladly supply you with literature and complete details if you will write at once.
All Master Garage Pumps are sold on a ten-day trial---that never fails to clinch the sale.
They always prove their ability and necessity.

N. B.---All pumps are priced F. O. B. Hartford. We do not prepay shipping charges.

Our stock motors are for 110 volt direct current and 110 volt single phase, 60 cycle, alternating current, but where necessary, we can furnish motors for 220 volt direct current, 110 volt, 25 to 40 cycle alternating current, or 220 volt 25, 40 or 60 cycle alternating current. *State current conditions when ordering.*

Manufactured and Guaranteed by

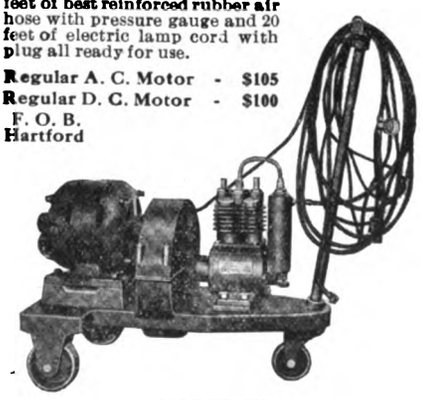
HARTFORD MACHINE SCREW CO.

502 CAPITOL AVENUE, HARTFORD, CONN.

MODEL Y
Stationary Only
Complete as shown - - $40
F. O. B. Hartford.

Model W, complete with 20 feet of best reinforced rubber air hose with pressure gauge and 20 feet of electric lamp cord with plug all ready for use.

Regular A. C. Motor - $105
Regular D. C. Motor - $100
F. O. B. Hartford



MODEL W
Portable or Stationary

MODEL P
Portable or Stationary

Stationary—Electric driven. Complete, ready for use with 20 feet of best reinforced rubber air hose—with pressure gauge attached and 20 feet of electric lamp cord with plug.

Regular A. C. Motor - - $60
Regular D. C. Motor - - $55
F. O. B. Hartford

Model P—On truck same specifications and power as Model P stationary.

Regular A. C. Motor - - $65
Regular D. C. Motor - - $60
F. O. B. Hartford

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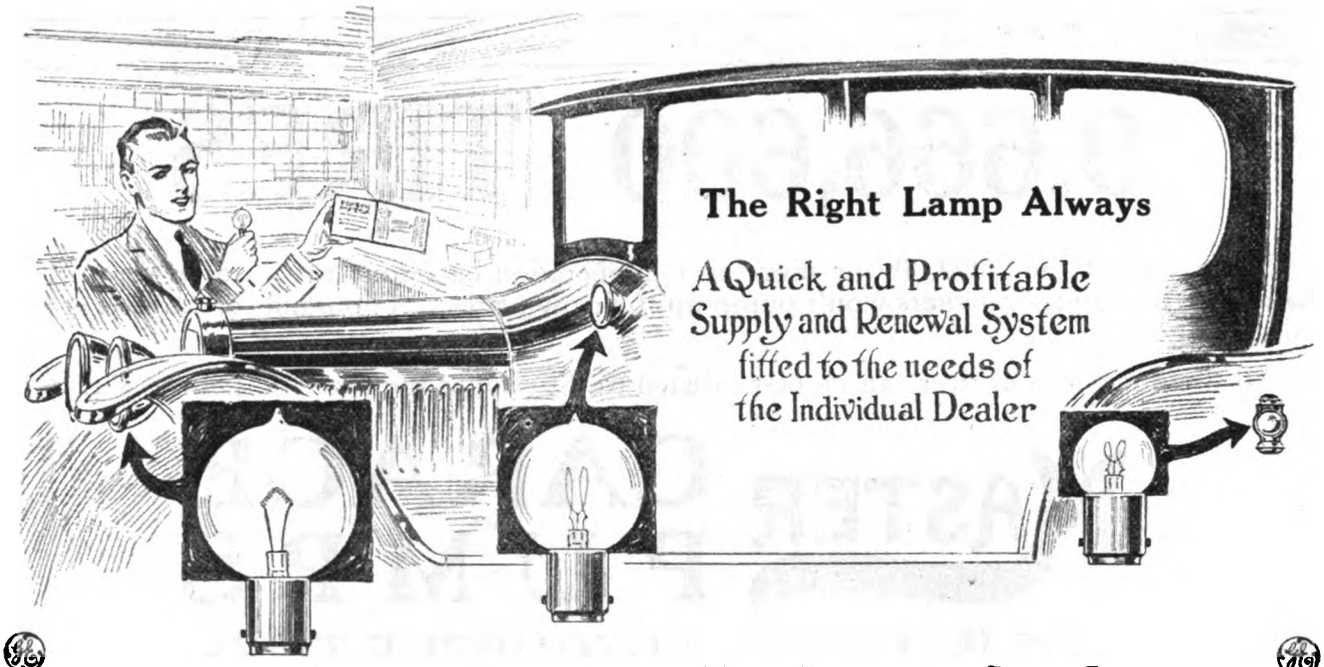


and a Good Profit all along the line

FOR the price of a good tire you can put on your counter our Automobile Lamp Assortment containing enough selected sizes and types of lamps to supply the *right* lamps to practically every automobile owner in your locality.

Our booklet lists the proper lamps for all electrically lighted cars so your clerk can't make a mistake. Better still, our new lamp chest makes it easy for you to sell six lamps instead of one to every driver. From the Assortment stock you select the proper head, side, rear and meter lamps and pack them in the lamp chest. With it the car owner is insured against any lighting emergency.

Write today for our money-making dealer proposition. Be the *first* in your locality.

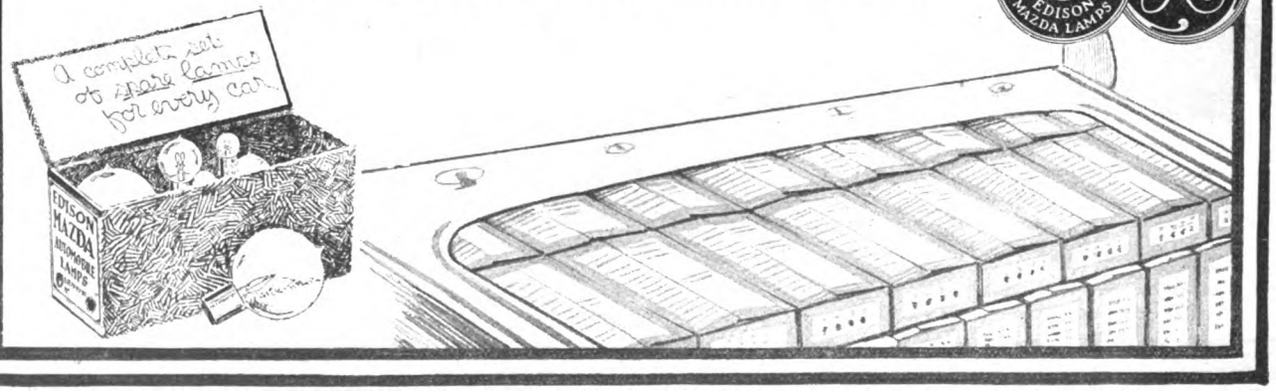
EDISON LAMP WORKS

OF GENERAL ELECTRIC COMPANY
HARRISON, N. J.

EDISON MAZDA

6014

Auto Lamp Chest and Auto Lamp Assortment



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EASE OF OPERATION

THE DETROIT GEARLESS TIRE PUMP takes the last bit of hard work out of motoring. The pump is carried in the tool box with tube and gauge attached. It is attached to the crankshaft when it is to be used and this operation requires but a half minute.

The pump is strongly and sturdily built, and can't get out of order. It is made like your motor, the downward stroke of the piston drawing in the air, and the upward stroke forcing it through the tube to the tires.

It is recognized as standard in the trade, and is unqualifiedly endorsed by the engineering department of every company, to whose product it can be attached.

GEARLESS DETROIT MOTOR-DRIVEN TIRE-PUMP
PATENTED AUG. 24, 1915
IS THE IDEAL POWER PUMP

Offers the dealer maximum profits with minimum labor. If you sell a gear driven pump your profits are eaten up in the labor costs of installing it.

But with the Detroit Pump, you simply hand it over the counter and pocket your profit on the sale.

An important fact is that one sold makes many. We have many letters from dealers who say that one pump sold in a neighborhood leads to other sales.

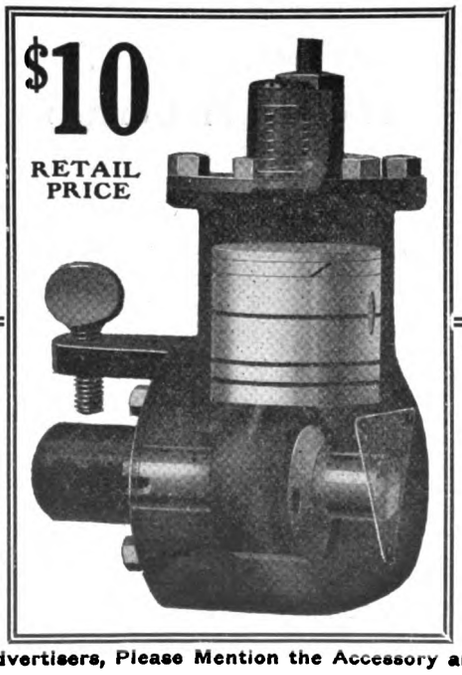
Order one, at once; try it out and then show it to your trade. You'll be surprised to see how easy it will be to sell a large number.

Ready for Reo, Chandler, Saxon Six, Dodge Brothers, Studebaker 1914-1915-1916, Overland 75-83-84, and Hudson Super Six.

519 Hillger Ave. DETROIT ACCESSORIES CORPORATION Detroit, Mich.

NOTE:

Beware of pumps infringing the basic patents of the Detroit Gearless Pump.



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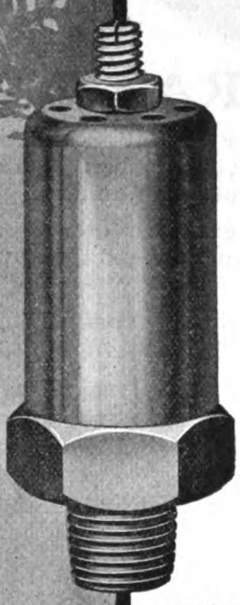
RESPONSE!
QUICK and POSITIVE!



A Brisk Sprightly Motor
in Addition to Fuel Savings of 15 to 35%

Just because motorists are so enthusiastic about the savings in gasoline that they are making with our new valve, some dealers are forgetting the other advantages it gives. So we call your particular attention to the fact that you can guarantee to customers a motor that is more brisk and sprightly, that responds more keenly and vigorously, when they have installed a

BRUGAN $4.00
ECONOMY VALVE

This little "miracle man", besides saving 15 to 35 per cent fuel and giving greater power, will so tone up the motor that it is a new pleasure to drive. Perhaps that sounds too good to be true, but there is only one way to find out—so try it and see.

Of course we don't want you to forget the main argument on gasoline economy—more miles per gallon of gasoline. Remember the adjustable feature, too. It permits most efficient operation for each car.

If you are not cashing in on "Brugan advertising and Brugan results", let us send you our interesting proposition.

Write today.

The Brugan Company, Bangor, Maine

Western Branch
The Brugan Company
276 Golden Gate Ave., San Francisco, Cal.

Southern Branch
The Brugan Economy Valve Co.
Atlanta, Ga.

84-8

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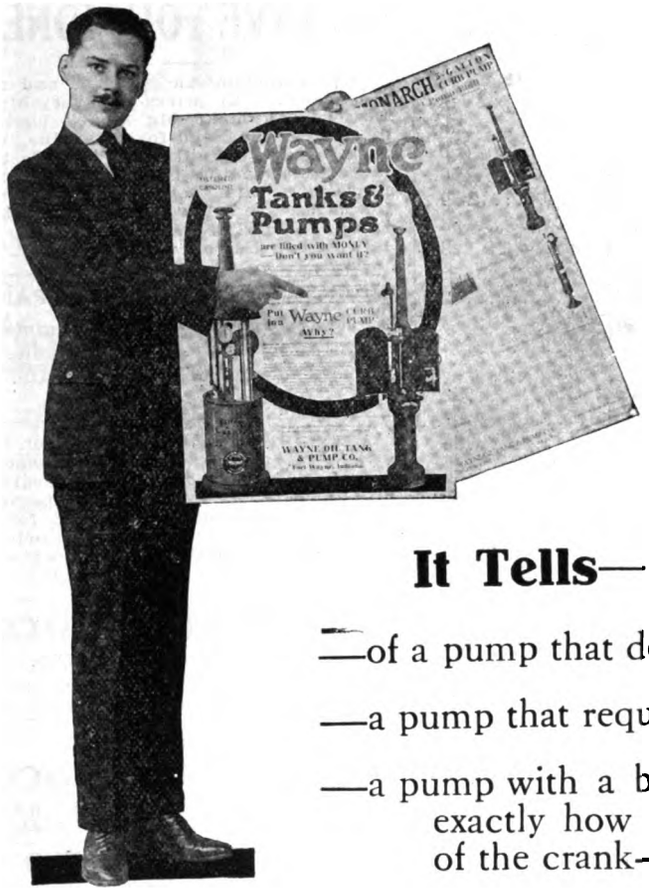

Send for this Big Folder For the Last Word in Curb Pumps

It Tells—

—of a pump that delivers twenty gallons a minute—

—a pump that requires no ***backward*** strokes—

—a pump with a big clock dial that tells the customer exactly how much "gas" he is getting every turn of the crank—

—a line of pumps with FILTERS so efficient that we ***guarantee*** water-free, dirt-free gasoline.

It tells of small and less expensive curb pumps.

It describes efficient modern systems for handling gasoline, kerosene, paint oils, harvester oils, etc., inside the store.

How We Co-Operate

We have also worked out a plan by which dealers who buy Wayne pumps are given good-sense help in bringing in the consumer-buyer.

Our Customers Like Us.

They like our attitude toward them—our willingness and intelligence in serving—our habit of entering into their problems and consulting their wishes.

WRITE FOR THE BIG CIRCULAR, AS WELL AS CATALOGUES, PRICES, ETC.

Wayne Oil Tank & Pump Co.

2 Canal St., Ft. Wayne, Ind.

Gentlemen:

Please send me the Big Folder telling about Wayne Curb Pumps, Storage Systems, etc.

Name.....

Street No.....

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"No Infringement"

we therefore advise our customers that they will be free of the annoyances of the past in this connection.

The Lennon Light Protector is a ***patented***--- flexible Brass Reflector, heavily plated--- which throws ***all*** the light ***on the road*** and ***Stops*** the ***Glare*** prohibited by Law.

Made in two sizes, to fit any head lamp.

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Willimantic, Conn.

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J. H. FAW, Inc.

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FOR AUTOMOBILES

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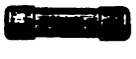
Style B



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Price, each $ .05

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Price, each $ .18

Style L

7/16 x 1 in. Fibre
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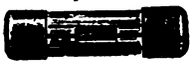
Style DG



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Price, each $ .10

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7/16 x 1½ in. Fibre
Price each $ .18

Style E

9/16 x 2 in. Fibre
Price, each $ .25

When ordering do not fail to specify Fuse Number and make of Car. This will insure our sending the correct Fuse.

Package Lots--100

GASOLINE CARS. Make of Car	USES FUSE NO.
Allen	DG15
Amesberry	E20
Arbenz	C10
Auburn 1915	D15
Austin	D15
Brisco	B20
Cadillac 1913	C15
Cadillac 1915	E25
Cartercar, Model 9	C15
Case Car	D15
Chadwick	D15
Chalmers	E20
Chalmers, Model 32	A20
Chandler	D5
Chandler 1916	A20
Chevrolet	E20
Cole 1913-14	C15
Cunningham J. 1914	C15
Cunningham J. 1915	A20
Cunningham J. 1916	D20
Davis-6	A20
Davis	D15
Detroiter	D15
Dispatch	C10
Dodge 1915-16	C10
Derris	DG15
Dort	B15
Empire	B15
Eager	A20
Fiat	D15
Fiat, 1916	E30
Franklin	B15
Glide	D15
Hudson	C15
Hupmobile 1914	D15
Hupmobile 1915-16	C15
Imperial, Model 56	C5
Imperial, Model 64	A20

GASOLINE CARS. Make of Car	USES FUSE NO.
Imperial, Models 66F and 66, 1916	DG15
Jeffery 1913-14	D15
Jeffery 1915	C10
Jeffery 1916	B20
Kissel-Kar 1915	C15
Kissel-Kar 1916	B20
Kline	D20
Knox	C15
Lexington-4	E15
Lexington-4	DG15
Lexington-6	D15
Locomobile 1913	L5
Locomobile 1913	L10
Locomobile 1914	E30
Locomobile 1915	D15
Locomobile 1916	DG10
Lyons-Knight 1913-14	C10
Lozier	E10
L. C. E.	C15
Marion	D15
Marmon	C20
Maxwell 1915-16	C20
MacFarlan-76	D15
Mercer	D5
Metz	A20
Mitchell 1913-14	C15
Mitchell 1915	B15
Moline 1914	C10
Moline 1915	D15
Moline, Model 40	A20
Monroe	E20
Norwalk-6	D15
National 1914	C15
Oakland	C15
Overland 1914 Coupe	E20
Overland 1916-(79-83)	A20
Pathfinder 1914	A20

GASOLINE CARS. Make of Car	USES FUSE NO.
Pathfinder 1915-16	D15
Packard 1916	B10
Paige	A20
Peerless 1914	B20
Peerless 1915	A20
Pierce Arrow	DG5
Pierce Arrow	DG10
Pierce Arrow	DG30
Pope-Hartford	C10
Pratt	A20
Premier	B10
Premier	C10
Pullman K	D10
Regal 1914-15	D5
Reo 1914-15	C10
Reo 1914-15	C15
Saxon-6	A20
Saxon-6	D15
Singer-6	D15
Spaulding-18	D10
Studebaker 1914	C15
Studebaker 1915-16	B15
Studebaker-6	A20
Stearns-Knight	A20
Stearns-Knight 1916	B20
Speedwell	C15
Stayer	C15
Stutz	B15
Velie, Model 15	A20
Westcott	C15
Winton	B10
Winton, Model 21A	D5
Winton, Model 21A	D20
White	C10
Willy's-Knight	E20
Willy's-Knight	D15
Willy's-Knight	C15
Willy's-Knight	B15
Zimmerman	B15

ELECTRIC CARS. Make of Car	USES FUSE NO.
American	D10
Anderson	E10
Argo A-B-C	D10
Borland	D5
Broc	D10
Baker	D10
Bailey	E10
Century	E10
Chicago	D15
Detroit 1914-15	E10
Detroit	D5
Dayton	E15
G. V. C.	E15
Grinnell	E15
Ohio	E15
Standard	E15
Waverly	C5
Woods	D5

ELECTRIC STARTING AND LIGHTING SYSTEM FUSES.

Make of Car	USES FUSE NO.
Dean	B15
Electric Auto Lite	A20
Esterline	C15
Gray & Davis	A20
Gray & Davis Ford	DG30
North East	C10
Remy	B5&15
Westinghouse	C15
Westinghouse Special	D20
Westinghouse (Ford)	B15

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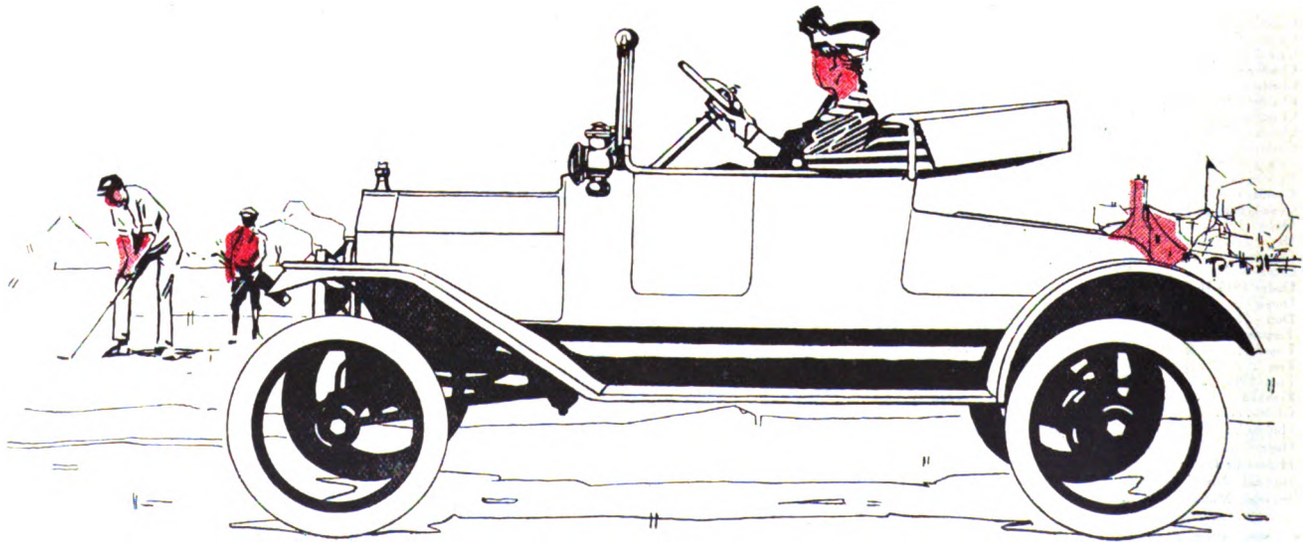

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

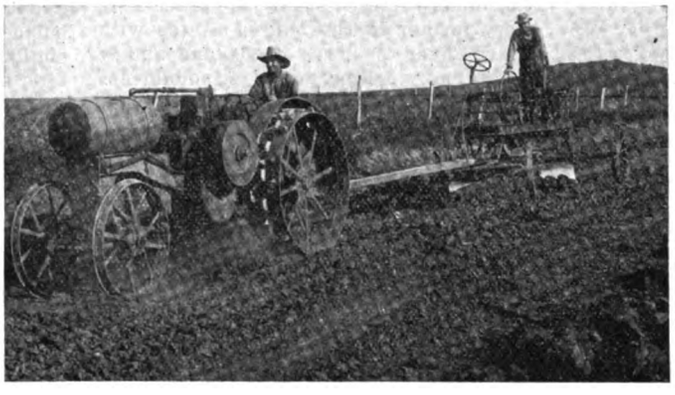
VOL VI. PAWTUCKET, R. I., JULY 1916. No. 3

Agricultural Tractors Afford Big Selling Opportunity.

Demonstrations Now Being Held Throughout the Middle West Show There Is a Large and Lucrative Field for Motor Vehicle Dealers Handling Farm and Road Tractors—Huge Crowds Watch Exhibitions.

THE first two exhibitions of the National Tractor Demonstrations, one at Dallas, Tex., and the other at Hutchinson, Kan., held during the last two weeks of July, revealed a number of facts about tractors and their manufacture that tend to show it as one of the world's largest mechanical industries and one that has the possibilities of even outstripping the automobile business in greatness.

Some idea of the extent to which the tractor industry has already been developed may be gained from the fact that there were over 50 exhibitors at these demonstrations; but this is by far less significant of what is to come in this line, than the fact of the enormous and enthusiastic attendance, numbering into the thousands. The attendance in fact was a separate demonstration in itself. While the tractors were out on the fields the enormous crowds present were demonstrating that there was not only a great interest in this comparatively new labor saving machine but that there is also a big demand for it, and furthermore that it had opened a new field for the dealer and garage man. Incidentally it was demonstrated that the class of manufacturers engaged in the tractor industry, already numbering over 150, are equally as enterprising and as energetic as the men who are responsible for the miraculous growth of the automobile industry.

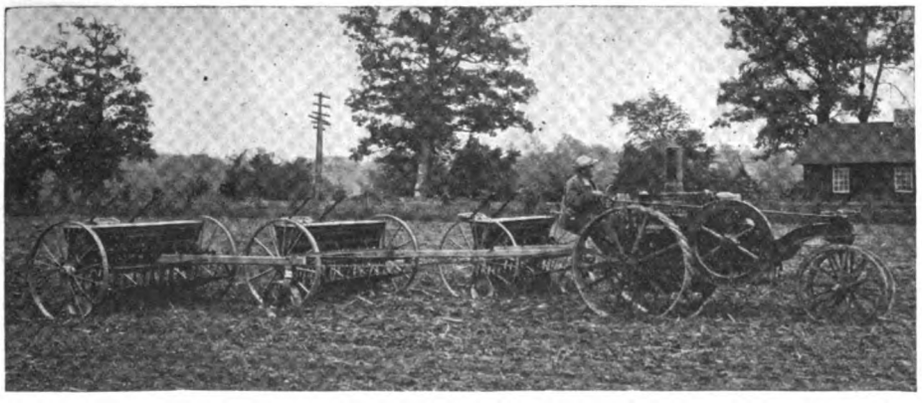


A Titan Tractor Road Grading Outfit Owned and Operated by the Town of Fairland, Oklahoma.

The demonstrations at Dallas and Hutchinson were the first of a series which is being held at a cost to these manufacturers of over $2,000,000, indicating that in marketing the tractor no expense is to be spared in making the farmer acquainted with its merits and that also, instead of waiting for the buyer to come around and see if the claims are true they are taking it to him for inspection. Other demonstrations were scheduled for St. Louis, July 31-Aug. 4; Fremont, Neb., Aug. 7-11; Cedar Rapids, Ia., Aug. 14-18; Bloomington, Ill., Aug. 21-25; Indianapolis, Ind., Aug. 28-Sept. 1; Madison, Wis., Sept. 4-8.

A large number of accessory manufacturers are also holding exhibits in connection with the demonstrations. The tractor manufacturing concerns demonstrating their machines at the different cities are as follows:

Advance-Rumley Company.. ..... Laporte, Ind.
Albaugh-Dover Company.... ..... Chicago, Ill.
Allen Tractor Co..... ..... Chicago, Ill.
Allis-Chalmers Manufacturing Company .....Milwaukee, Wis.
Aultman & Taylor Machine Company ..... Mansfield, O.
Avery Company.....Peoria, Ill.
B. F. Avery & Sons.....Louisville, Ky.
C. L. Best Gas Traction Company..... .....Oakland, Cal.
Commonwealth Tractor Co..... .....Kansas City, Mo.
Buckeye Manufacturing Company..... .....Anderson, Ind.
Bull Tractor Company, Minneapolis, Minn.
Bullock Tractor Company....Chicago, Ill.
J. I. Case Threshing Machine Company ....Racine, Wis.
Chase Motor Truck Company ....Syracuse, N. Y.
Dauch Manufacturing Company.. .... Sandusky, O.
Dayton-Dick Company, Quincy, Ill.
Denning Tractor Company ....Cedar Rapids, Ia.
Dunham Company...Berea, O.
Electric Wheel Company ....Quincy, Ill.
Emerson-Brantingham Implement Company ....Rockford, Ill.



Seeding 60 acres in 10 Hours With a Tractor at an Actual Cost of Six Cents Per Acre for Power.

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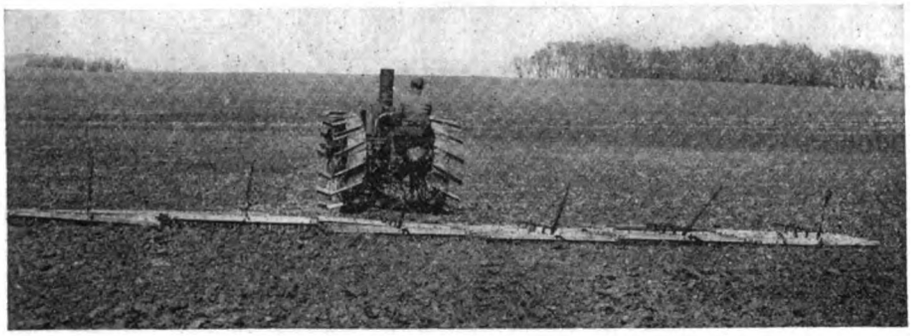

L. C. Jaques of Green County, Ia., Harrows 80 Acres in 10 Hours With This Mogul Tractor.

Ford Tractor Company .....
.....Minneapolis, Minn.
Gray Tractor Company .....
..... Minneapolis, Minn.
Happy Farmer Tractor Company.....
..... Minneapolis, Minn.
Hart-Parr Company.....Charles City, Ia.
Holt Manufacturing Company, Peoria, Ill
Huber Manufacturing Company,.....
..... Marion, O.
International Gas Engine company....
..... Cudahy, Wis.
International Harvester Company.....
..... Chicago, Ill.
Interstate Engine and Tractor Co.....
..... Waterloo, Ia.
Joliet Oil Tractor Company....Joliet, Ill.
Kansas City Hay Press Company.....
.....Kansas City, Mo.
Kinnard-Harness Company .....
..... Minneapolis, Minn.
Killen Strait Co.....Appleton, Wis.
John Lauson Manufacturing Company
.....New Holstein, Wis
Lawter Tractor Company...St. Marys, O.
Maytag Company.....Newton, Ia.
Minneapolis Steel and Machinery Company.....Minneapolis, Minn.
Moline Plow Company.....Moline, Ill.
McIntyre Manufacturing Company.....
..... Columbus, O.
Nilson Farm Machine Company.....
..... Waukesha, Wis.
Parrett Tractor Company....Chicago, Ill.
Peoria Tractor Company.....Peoria, Ill.
Pioneer Tractor Company..Winona, Minn.
Rock Island Plow Company.....
.....Rock Island, Ill.
Russell & Co.....Massillon, O.
Simplex Tractor Company.....
.....Minneapolis, Minn.
Standard-Detroit Tractor Company....
.....Detroit, Mich.
Steel King Tractor Company.....
..... Detroit, Mich.
Sweeney Tractor Company .....
.....Kansas City, Mo.
Tom Thumb Tractor Company .....
.....Minneapolis, Minn.
Townsend Manufacturing Company....
.....Janesville, Wis.
Waite Tractor Company.....Chicago, Ill.
Wallis Tractor Company....Racine, Wis.
Ward Tractor Company.....Lincoln, Neb.
Waterloo Gas Engine Company.....
.....Waterloo, Ia.
Wilmar Tractor Manufacturing Company .....Wilmar, Minn.

The fact that the tractor is meeting with an instant demand, as shown at these demonstrations, as well as by the large number in use, is not surprising as it really represents the greatest invention for the uplift of agricultural pursuits since the adoption of the cotton gin and the harvesting machine.

The tractor looms large as a proposition for the dealer as was evinced at the first two demonstrations by the attendance of men in this business who attended with the intention of establishing sales agencies for the manufacturers. It is looked upon as a natural sequence that the men who have handled automobiles as agents and garage owners should become the distributing medium for the tractor. Many dealers well known in the automobile business in the southwest have already become selling agents for various tractor manufacturers and are enthusiastic over the business prospects.

This field for marketing the tractor has not even been scratched as yet, although the machine itself is a highly developed proposition, representing the results of over 15 years of experimentation. It has been thoroughly tested and is now ready for distribution on an enormously large scale as practically every farmer in the United States with a farm over 90 acres needs one and it has so many selling points, it should not be very difficult to convince the farmer of its desirability

To say that the farm tractor offered the dealers an opportunity greater even than the automobile would seem at first glance an exaggeration but a little analysis of the situation produces some facts that are almost unbelievable and which would indicate that the tractor industry has a promise of becoming the most gigantic enterprise in the world. Leaving out the foreign market entirely, which incidentally is absorbing thousands of tractors, the market in the United States affords a quantity production that should easily eclipse the automobile records in this respect. According to the figures of the United States Census reports there are over 6,000,000 people in the farming class While constituting a big market in themselves, the most important fact about this great number of people is that they produce $10,500,000,000 worth of agricultural products every year which is a greater value than is produced in any other industry. The bulk of this money is produced on the big farms where the tractor attains its greatest efficiency, but any farm over 90 acres can utilize it with profit and there are many cases where it is being put to practical uses on very small farms.

The custom of buying tractors on the cooperative plan is being followed out in small communities where the farms are so small that there is not enough work to make them profitable unless they can be used by several different farmers. A plan to encourage this method of using the tractor has been worked out by the British agricultural authorities and it is proving very practical for British farmers whose operations have been guided by the government with the object of increasing the production of the soil. The demand there for tractors has been so great that while a movement is on foot to exclude the American made automobile the American made tractor is welcomed in almost any numbers.

As to the relations of the dealer, distributor and manufacturer in the tractor business it might be said that they are similar to those existing in the automobile business and similar discounts to the trade are the rule. Maintenance and service are a factor but entail less complications as the tractor is a much more simple machine than the automobile. Furthermore it does not use pneumatic or rubber tires and is devoid of the delicate mechanisms that are usually the source of trouble, calling for service by the automobile owner. The tractor, however, does require accessories in the course of its life and this will make a steadily increasing demand upon the garage keeper and accessory dealer.

The field for the tractor dealer of course will be most lucrative in the west, southwest and northwest, although the eastern states, and in fact every state, offers a good market. While west of the Mississippi River the farms are very large, in the east there are more farmers, but these farms are on a smaller scale, consequently conditions about balance up.

C. L. Shipman of Hughesville, Penn., Delivers Mogul Kerosene Tractors to His Trade Two Carloads at a Time.

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Silver Takes Over Chalmers Agency.

Closes $6,250,000 Contract for New York and Adjoining Territory, Giving Up Overland Agency.

Through one of the largest financial transactions ever made between an automobile dealer and a manufacturer, C. T. Silver, who has the reputation of being one of the largest retail automobile distributors in the world, becomes the agent of the Chalmers Motor Car Company in New York City, Long Island, Staten Island, New Jersey and in a part of Connecticut. The contract closed with Mr. Silver calls for $6,250,000, a sum greater than the entire capitalization of a majority of the automobile companies in America.

The announcement that Mr. Silver had given up the Overland to take on the Chalmers, created widespread surprise in trade circles. The contract with the Chalmers company calls for 10 per cent. of their output for one year, beginning Aug. 1. The distribution will be conducted under the name of C. T. Silver, Inc. The territory covered is practically the same as he controlled as agent for the Overland, except that he will handle the parts business for the Chalmers company on the Atlantic seaboard. Besides his headquarters on Broadway Mr. Silver will maintain his branches in Newark, the Bronx, Brooklyn and Yonkers.

The story of Mr. Silver's career in the automobile business is one of dazzling brilliance, as he is yet a young man with less than 10 years' experience in the trade. He started about seven years ago with the Koehler company in New York selling Buicks. He later went to the Buick branch in Brooklyn, where he quickly distinguished himself. He next started an Overland agency in Brooklyn, later moving to Manhattan, where he established the Overland agency.

In 1914 he made a sensational business move which brought the lime light of the trade to bear upon his genius. That year he acquired the big Peerless building, which was considered the finest automobile sales building in the world. From this point he rapidly developed an extremely efficient sales organization, covering the territory mentioned.

ELGIN-NEW ERA MERGER.

The Elgin Motor Car Corporation of Chicago has taken over the New Era Engineering Company of Joliet, Ill., and will include in its manufacture the light four and little delivery truck made by the latter company. The combination will make a strong organization and according to Mr. C. S. Rieman and President Brown of the Elgin Motor Car Corporation, will be of incalculable benefit because of the splendid facilities the New Era company had in getting material. It also makes an advantageous combination, as the dealers handling the Elgin Light Six found a demand also for a light four and a small delivery car.

Both companies in the merger were enjoying increasing prosperity, having their entire outputs sold, with deposits paid in advance on every car. A new factory is now in course of erection and when completed will give the company a capacity of 40 to 50 cars per day.

Paige-Detroit Shows Increased Earnings.

On Estimated Production of 16,000 Cars in 1916 Earnings Are Expected to Be $1,500,000.

The Paige-Detroit Motor Car Company's earnings for 1916 are estimated at $1,500,000, as compared with actual earnings in 1915 of $654,000 and $123,000 in 1914.

As of June 1 the net tangible assets of the company with the full $1,000,000 stock outstanding were $1,504,497, or $15 per $10 share. The last balance sheet is as follows:

ASSETS.

Plant	$158,733
Inventory	742,421
Service station accounts	154,914
Notes and accounts receivable	120,161
Prepaid expenses	4,825
Cash and Detroit bonds	682,808
Total	$1,863,990

LIABILITIES.

Capital stock	$1,000,000
Current accounts	354,668
Surplus	509,321
Total	$1,863,990

The earnings' record and production figures estimated for 1916 and actual for the two preceeding years are presented in the following table:

	Prod.	Earnings on Stock	Per Cent.
1916 (Est.)	16,000	$1,500,000	150
1915	7,749	654,000	65.4
1914	5,262	123,000	12.3

The stock is now on a dividend basis of 3 per cent. per month.

This year's earnings figure at the rate of 150 per cent. on the company's outstanding stock.

NEW ELECTRICAL CONCERN.

The Wagner-Hoyt Electric Company, which will manufacture complete electrical equipment for automobiles, has been organized in New York. The principal factors in the organization are A. F. Wagner, president of the Wagner Specialties Company of New York; Frank Hoyt, formerly chief engineer of the Simms Magneto Company, and Gerald Laugh, recently with the National Cash Register and Burroughs Adding Machine companies. It is reported that the factory will be located somewhere in New Jersey. The product will be marketed as a complete unit.

Combination of Parts Companies.

Three Large Manufacturers Merge Interests to Achieve Economies in Manufacturing.

Announcement of the consolidation of the Steel Products Company of Cleveland, O., the Michigan Electric Welding Company, Detroit, and the Metals Welding Company of Cleveland was made in Detroit recently.

The merger, it is understood, was carried out with the purpose of effecting the economies that large scale operation afford and to increase the service to the car manufacturers. The Steel Products Company, of which C. E. Thompson is president, will be the parent concern, while the other two will be operated as subsidiary companies. Mr. Thompson will head the new organization, with W. D. Bartlett, vice president, and J. A. Krider, secretary and treasurer.

The three concerns are leaders in their respective lines and own equipment that covers some of the most important processes in the automobile industry.

OVERLAND OPENS N. Y. BRANCH.

A direct factory branch of the Willys-Overland Company has been opened in New York City with temporary headquarters and show room at 1826-28 Broadway. One of the finest service stations in the East, which is located at 150th street, is also prepared to take care of the needs of the thousands of Overland owners in that district. At the station there is a stock of parts worth $100,000 and a floor area of 60,000 square feet.

These accommodations are temporary while the new building is being erected, facing on Fifty-seventh and Fifty-eighth streets, between 10th and 11th avenues. When finished the new service station will have 300,000 square feet of floor space and represent an investment of $1,000,000. The Overland company is also planning to open factory branches and service stations in Brooklyn and Newark.

Edwin B. Jackson, who was president of the Packard Motor Car Company of New York, before becoming connected with the Willys-Overland Company, will devote a large part of his time to directing the new branch and service stations in New York, as his experience there has given him expert knowledge of metropolitan motorists' needs.

MAY BUILD NEW CAR.

It is reported in New York that Eric H. Delling, chief engineer and designer of the Mercer Automobile Company, is to sever his connections with that company and will design a new car to bear his name. Owing to Mr. Delling's reputation as an engineer, both here and abroad, much interest is centred in the report and the trade is eagerly anticipating an announcement giving full details.

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Nash Takes Over Jeffery Company.

Former President of General Motors, with Boston Banker, Buys Old Established Concern.

The entire stock of the Thomas B. Jeffery Company, Kenosha, Wis., maker of pleasure and commercial cars, has been taken over by C. W. Nash, who recently retired from the presidency of the General Motors Company, and Lee, Higginson & Company, Boston, the banking concern which financed the General Motors Company some years ago. Rumor has it that the purchase price ranges around $9,000,000. The Jeffery company is capitalized at $3,000,000, and that means the price would be about $300 a share.

Mr. Nash's active connection with the Jeffery company begins August 1. It is understood that C. T. Jeffery, H. W. Jeffery and T. M. Kearney, who constitute the present board of directors, will continue in that capacity for the present at least. Further details are expected at an early date.

The Jeffery company has always held an estimable position in the motor vehicle world. It was founded about 17 years ago and now is one of the largest motor car plants in the middle west. Its Jeffery Quad, a four wheel drive truck, has been a decided success and is now extensively used for military purposes in this country and abroad.

PAUL SMITH.

Paul Smith, vice president and general sales manager of the Chalmers Motor Car Company, Detroit, Mich., met his death under extremely tragic circumstances in New York City on July 15, falling from a window on the 10th floor of the Hotel Biltmore to the sidewalk on East Forty-fourth street.

Great sorrow is felt in trade circles over his sudden death, not alone because he was one of the most popular and highest salaried young men in the automobile industry, but that he did not live to reap the rewards and fame he had earned two days prior to his demise, in closing one of the largest automobile transactions ever made. On the previous Thursday he had signed a contract with C. T. Silver of New York through which the latter not only became the New York Chalmers agent, but agreed to take 10 per cent. of the output of the Chalmers factory during the ensuing year, which involved $6,250,000.

There are few parallels to Mr. Smith's career in American industry. While only 33 years of age, his salary was said to be $50,000 a year. He was born in Maine. He was graduated from the University of Illinois as a physician and practised for a time, but soon abandoned the profession and went into a Detroit automobile factory to learn the business. Later he became associated with the Goodyear Tire and Rubber Company, the Studebaker Company and the Lozier Company. About a year ago he went with the Chalmers Motor Car Company of Detroit as vice president and general manager. During the year he not only raised the number of agents from 600 to 1500, but sold $22,000,000 worth of Chalmers cars.

CHALMERS TO HANDLE SALES

Trade interests understand that Hugh Chalmers, president of the Chalmers Motor Car Company, will himself take the direction of the sales department, which was handled by Paul Smith, recently deceased. Mr. Chalmers is acknowledged to be one of the best salesmen in the motor vehicle industry.

Extra Dividend For Overland Investors.

Company's Stock Has Been Placed On 12 Per Cent. Per Annum Basis By Extra Dividend.

In addition to declaring a regular quarterly cash dividend of 3 per cent., which places the stock of the Willys-Overland Company on a 12 per cent. per annum basis, the directors at the recent meeting also declared an extra stock dividend of 10 per cent. The cash dividend is payable August 1 to holders of record July 24, and one half of the 10 per cent. stock dividend is payable Oct. 2 to holders of record Sept. 15, the balance being payable April 2, 1917, to holders of record March 15, 1917.

STUTZ DECLARES DIVIDEND.

Directors of the Stutz Motor Car Company, Indianapolis, have declared a dividend of $125,000, payable Sept. 1. All the stock of the company is owned by the Stutz Motor Car Company of America, recently financed by Allen A. Ryan and associates. The parent company has outstanding 75,000 shares of stock of no par value, so that the declaration of the operating company is equivalent to $1.66 per share of stock of the Stutz Company of America. This action may be construed as indicating that the Stutz stock will shortly be placed on a $6 dividend basis.

NEW MITCHELL COMPANY FORMED.

A new company known as the Mitchell Motors Company has been formed to acquire the business of the Mitchell-Lewis Motor Car Company of Racine, Wis., and to finance the expansion of the business.

A syndicate of New York and Chicago bankers has been formed to underwrite the capital stock of the new company, which will consist of 125,000 shares without par value.

It is probable that an expenditure of $100,000 will be made in factory improvements.

Packard Issues Earnings Statement.

Detroit Manufacturer Shows In a Financial Statement Record Profits In Car Manufacture.

A statement of earnings dating from 1909 has been issued by the Packard Motor Car Company, Detroit, it showing that the company's earnings have been increased from $2,612,774 in 1909 to about $6,050,000 in 1916. The last figure is of course estimated, but it is based upon warrantable statistics. After paying regular preferred and common cash dividends and deducting the 10 per cent common stock dividend distributed Feb. 1, 1916, and the 50 per cent stock dividend to be distributed August 1, 1916, the balance in the surplus account at the end of the year is expected to exceed $6,376,344. This figure is after deducting depreciation for seven years, aggregating more than $9,000,000.

ENTERS RUBBER GOODS FIELD.

The Brunswick Balke Collender Company, Chicago, New York, San Francisco and Paris, one of the country's largest manufacturers of hard rubber sporting goods articles, has entered the automobile field with a complete line of rubber parts and accessories, from tires to the smallest rubber unit to be found on a car. The Brunswick Skid-Not tire will be made at the Muskegon, Mich., plant, this tire being only one of the large variety of products. It will be of the wrapped tread, single cure type with black tread and side walls. Another feature of the line will be a self healing tube. J. E. Duffield, formerly Western manager of the Thermoid Rubber Company and more recently with the United States Rubber interests, will be sales manager for the rubber goods and automobile division of the company.

NEW BOSCH CONTRACTS.

The Bosch Magneto Company, New York City, reports that it has recently signed contracts for Bosch magnetos with the following concerns: Palmer-Moore Company, Syracuse, N. Y.; Sterling Automobile Manufacturing Company, New York City; International Motor Company, New York City; Thomas Auto Truck Company, South Bend, Ind.; Martin Carriage Works, York, Penn.

DIVIDEND OF THREE PER CENT.

A dividend of three per cent. has been declared on the preferred stock of the Springfield Body Company, Springfield, Mass., and Detroit, Mich. It includes the regular dividend of two per cent. for the quarter ending June 30, and one per cent. for the period between Feb. 15 and April 1.

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WHAT MANUFACTURERS ARE DOING.

Expansion of Manufacturing Facilities and Working Capital Is a Feature of the Month's News.

The Neville Steering Wheel & Manufacturing Company, of Detroit, has absorbed the Neville More-Room Steering Wheel Company. F. A. Vollbrecht, formerly general manager of the King Motor Car Company, is president of the new corporation; John V. Harding is vice-president and A. W. Webber, secretary and treasurer. The new company has obtained quarters at 74 Congress street, West Detroit, where it is now devoting its energies exclusively to manufacturing a full line of Neville More-Room steering wheels.

The Gray & Davis, Inc., Boston, Mass., which has been manufacturing a single unit starting-lighting system for Fords, now offer a brand new system. It is of the double unit type, there being a motor for starting and a dyamo for generating current. The price is the same as that of the single-unit type, $75. The new outfit occupies the same position at the front of the engine, high up, as the old and occupies but little more space.

The Diamond Chain & Manufacturing Company, Indianapolis, Ind., will begin the erection of a complete manufacturing plant on the six-acre tract of land which it acquired four years ago on Kentucky avenue. The building will be a concrete structure, four stories with 150,000 square feet of floor space. The main plant will be 380 feet by 60 with two ells 100 feet long making the entire frontage 700 feet. The additions will contain the heat treating and auxiliary buildings.

The Braender Rubber & Tire Company, Rutherford, N. J., is supplying to the trade a strikingly colored poster displaying the qualities and advantages of Braender tires. This poster is so arranged that it also can be used as a window transfer by cutting out the dog and tire and pasting them on the window.

The Milburn Wagon Company, Toledo, O., manufacturers of the Milburn electric, anounces an increase of $100 in the price of the model 22 brougham, which formerly sold at $1585 and is now sold for $1685. The reason for this increase is on account of the cost of materials.

The Willys-Overland Company, Toledo, O., has taken steps to facilitate distribution by the opening of new branches at Denver, Colo., Jacksonville, Fla., and Omaha, Neb., in addition to increasing its facilities at Columbus, O., Springfield, Mass., and Toledo, O. Buildings have been acquired in the first three named cities and remodelling and other expansion is being carried on in the latter three.

The Thomas Auto Truck Company, Inc., New York City, which was organized early this year, now has its 2-ton model ready for the market. There will be three models rated, ¾-ton, 1-ton, and 1½-ton. The two-ton model is built entirely of standard units, principal specifications including a 4-cylinder, 4⅛ by 5½ Buda motor, selective three-speed gearset, dry-plate clutch in unit with motor, worm drive, with Timken-David Brown worm; propulsion and torque are taken through the spring. The steering wheel is at the left with control levers in the centre. The company does not manufacture bodies but will furnish conventional designs on orders. Special designs will also be produced.

The Marathon Tire & Rubber Company, Cuyahoga Falls, O., has brought out a new ribbed tread tire, named the "Runner." There will be no change in price with the 5000 mile guarantee. The tread of the new tire has three parallel ridges of rubber surrounding two hollows. The design protects against side-slip. The new tire is furnished with white tread and fabric body or with black tread, whipcord carcass.

The Moline Plow Company, Moline, Ill., has decided to enlarge its plant to take care of its tractor department. The buildings will cost $1,000,000 and give employment of 1500 men, and house a machine shop, 100 by 765 feet; foundry, 180 by 360 feet, pattern vault, 64 by 230; core room, 60 by 122; mill room, 80 by 200, and cupola room, 60 by 60. These buildings will be devoted exclusively to the construction of farm tractors.

The Gibson Automobile Company, Indianapolis, Ind., has signed a contract with the Willys-Overland Company, Toledo, O., involving the purchase of 10,000 Overland cars during the season of 1916-17. The Gibson allotment in 1915-16 was 7000 cars, the increase being fully 42 per cent.

The International India Rubber Corporation, South Bend, Ind., will erect a plant in which tires and tubes will be manufactured. P. E. Studebaker is president of the company and the other officers are: vice-president, E. A. Schwab; treasurer, T. W. Slick; secretary, G. W. Odell. The company is establishing branches in various parts of the country. It was incorporated last fall for $1,000,000.

The James Levy Motors Company, 23rd street and Michigan avenue, Chicago, and one of the largest dealers in the middle west handling Chalmers cars, has taken over the Marion-Handley car and given up the Chalmers agency.

H. S. Lee, General Manager.

Louis Logie, Sales Manager.

PLANT OF THE CANADIAN CHALMERS COMPANY, WALKERVILLE, ONT.

Starting with Capital of $1,000,000 and a Plant Containing 36,000 Square Feet of Floor Space, the Chalmers Company of Canada, Ltd., Plans a Production of 2000 Cars for Its First Year. This Company Is Independent of the Michigan Chalmers Company and Will Make Its Cars of Canadian Materials as Far as Possible, Taking Care of the Canadian Trade as Well as that of England and British Possessions. The Production will be a Duplicate of Cars Made by the Michigan Concern.

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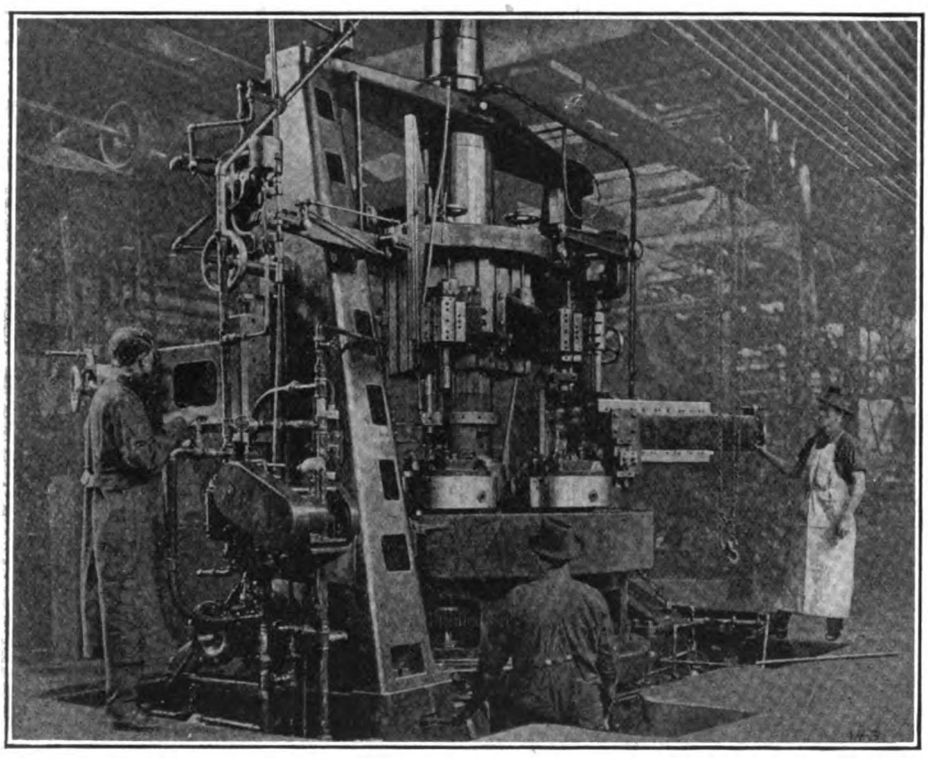
The Emerson-Brantingham Company, Rockford, Ill., for 62 years manufacturers of farm implements and who are the builders of the big four Emerson farm tractors, are planning to install a department for the manufacture of automobile bodies and fenders. The company is one of the largest carriage builders in America.

The Puritan Machine Company, Detroit, Mich., said to be the only concern in the world supplying all parts for all cars, announces that the new addition to its plant is now ready for occupancy and is situated directly opposite the main plant. This new building gives the company 15,000 additional square feet of floor space. The machine shop, which is now located in the main plant, will occupy the entire lower floor of the new building, while the second floor will be given over to the storing of surplus stock.



SPEEDING UP AND MULTIPLYING JEFFERY OUTPUT.

One of the Six-Spindle Hydraulic Boring Mills at the Thomas B. Jeffery Company's Plant at Kenosha, Wis., Which Are Used to Machine Flywheels and Knuckle Bodies at the Rate of 10 to 12 an Hour—The Mills Are Driven by Three-Cylinder Hydraulic Pumps Anchored Beneath the Flooring.

The Albion Bolt Company, Grand Rapids, Mich., has organized with a capital of $10,000. The company will manufacture bolts and nuts for motor cars, with the making of other parts as a side line. The officers and organizers of the company are Mark Merriman, president; C. B. Hayes, vice president; Otto Schwacha, secretary, and W. C. Morrey, treasurer.

The Disco Electric Starter Corporation has increased its capital from $250,000 to $350,000, this enabling plant expansion and increase of production. At the present time 50 Disco starters are being made per day, of which three-fifths are of the two-unit variety and the balance of the single-unit type. When the new machinery is installed it will add greatly to the output of the company.

Kramer Governor Company, Detroit, has changed the name to Monarch Governor Company. The concern's plant remains at 12th and Bethune streets. The company makes speed controlling device for trucks.

The John Obenberger Forge Company, Milwaukee, has been organized as a Wisconsin organization with capital stock of $125,000. John Oberberger is president; Lynn S. Pease, vice president; Carl Velguth, secretary. The plans for the building are complete and will contain seven hammers, ranging from 50 to 4000 pounds. The smaller sizes will be power hammers, while the larger sizes include a 4000-pound steam drop hammer, as well as 2500, 1500 and 800-pound hammers of the same construction. The power plant will be separate from the main shop and contains two 150 horsepower boilers, one 75 K. W. generator and one 125 horsepower Corliss engine. The machine shop will be equipped with sufficient die sinking capacity to take care of a plant with twice the number of hammers. The company will have lathe capacity to take care of the forgings made on the 25-pound single, open frame, steam forge hammers. On this single frame hammer will be made special crankshafts for experimental motors, and also repair work on break down jobs, where delivery is the main item. The plant will be located at 53rd and Burnham streets, West Allis, Wis.

The Wilmo Company, Chicago, Ill., and the Amplex Auto and Machinery Company of Mishawaka, Ind., have been purchased by the Gillette Motors Company, the latter having taken over all the property, patent rights and good will of the above named companies. The new address will be Gillette Motors Company, Mishawaka, Ind.

The Cummins Monitor Company, Columbus, O., found it necessary to increase its capital stock $100,000 in order to provide the funds necessary for an increase in the business. The company is headed by Charles C. Cummins as president and Frank S. Cummins is secretary and general manager. This increase in capital will enable the company to provide more manufacturing space and equipment.

J. P. Gordon Company, Columbus, O., has undertaken to manufacture automobile tires. This company was formerly known as the Vehicle Apron and Hood Company, formed 16 years ago by J. P. Gordon, and has been making tire covers, tops, accessories and raincoats. The latter branch of the business has been disposed of and a tire expert secured to superintend the manufacture of tires. As soon as the machinery is installed work will be commenced.

The Republic Motor Truck Company, Alma, Mich., has quadrupled its capital to $1,000,000. It was formerly capitalized at $250,000. The money obtained by the new stock will be used to improve a tract of ground the company has purchased and to triple the output of the plant.

The Goodwear Tire Company is building a factory in Red Wing, Minn., in which 200 tires are to be made daily. The company is capitalized at $300,000. H. Scott Ewers is president, and the other officers are: Vice president, G. W. Frabson; secretary, Frank E. Oberg; treasurer, C. W. Obert. Harry J. Smith is purchasing agent and factory manager.

The Quality Tire and Rubber Company, Hartville, O., has changed its name to the BeSaw Tire and Rubber Company. Charles BeSaw is president and general manager of the company and P. P. Parker is sales manager. The company is running its plant both day and night in turning out 150 tires every 24 hours.

The Guaranteed Magneto Parts Corporation, New York, N. Y., has been established at 1765 Broadway. This company will carry in stock magneto and spark coil parts, platinum and tungsten contacts, carbon, gauze and metal and starter brushes.

Higrade Motors Company, Buffalo, N. Y., has been formed with a capital of $250,000 and will embark in the manufacture of a medium sized truck, which will have a wheelbase of 115 inches and be mounted on four-inch pneumatic tires. It will have a four-cylinder 3¼ by five motor, equipped with Bosch ignition and an electric lighting and starting system. Other specifications include Sheldon springs and worm axle, Spicer drive, Fedder cellular radiator, Detroit gear transmission, Borg & Beck disc clutch, Lavine semi-irreversible steering gear. The chassis will weigh about 2200 pounds.

Packard Motor Car Company, Detroit, recently declared a stock dividend of 50

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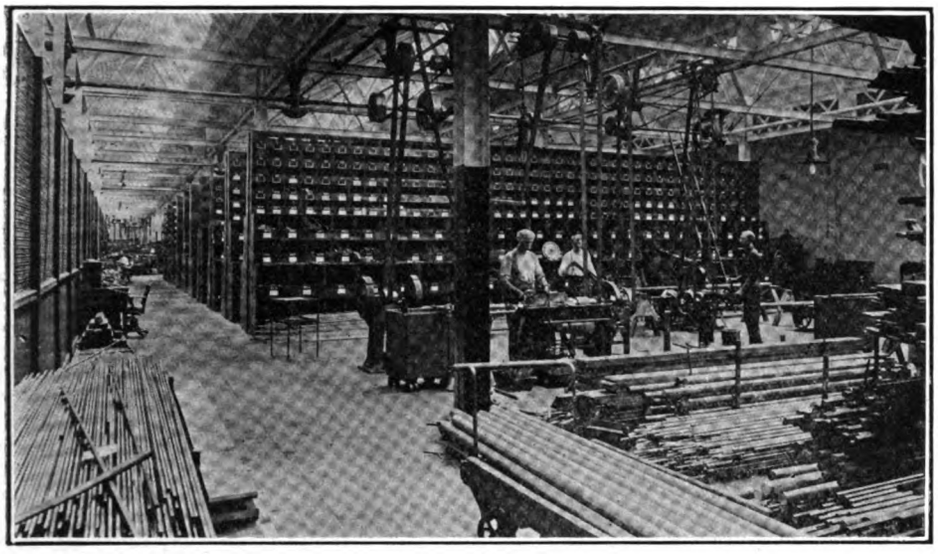


FIRST STEP IN BUILDING MAXWELL CARS.

This Illustration Shows the Immensity, and Likewise the Orderliness of the Maxwell Motor Company's Raw Stock Material Division—The Saw Tooth Roof Arrangement Admits Plenty of Light to All Parts of the Department, Particularly Where the Workmen Are Cutting up Raw Stock.

per cent. on the common stock, payable Aug. 1 to holders of record June 16. The amount of common stock now outstanding is $7,771,830. At the same meeting of the directors Henry B. Joy was formally elected chairman of the board and Alvan Macauley president of the company.

The Goodyear Tire and Rubber Company, Akron, O., have presented a kite balloon to the Ohio Field Artillery, of which Major Harold M. Bush is commander. The balloon is sausage shaped after the German models and is the only one of its kind in the United States, although the government has ordered several like it. It will be used by the military organization for observation purposes.

The Allen Motor Company, Fostoria, O., has brought out a new two-passenger roadster, mounted on the standard Allen chassis and selling for $795, which with the model 37 touring car will be continued without change at the same price.

The McGraw Tire and Rubber Company, East Palestine, O., has established warehouses in the Bush Terminal building, Brooklyn, N. Y., and at 14-22-24 Broadway, St. Louis, which will be used as centralized distributing points.

The Commercial Auto Body Company, St. Louis, Mo., has been incorporated with $50,000 capital stock. The incorporators are Hugh F. Cartwright, M. E. Cartwright and X. F. Wilfey. Mr. Cartwright has been conducting a factory at 16th and Pine streets and during the last year turned out 10,000 bodies. The capacity will be enlarged.

The Chevrolet Motor Company has purchased the plant of the Warner Manufacturing Company of Toledo, O. It will be a branch of the Chevrolet Motor Manufacturing Corporation of Flint, Mich., Tarrytown, N. Y., and New York City. The Toledo plant will be used to manufacture transmissions and gears for Chevrolet cars.

The Michigan Crown Fender Company is now in its new plant in Ypsilanti, with machinery in operation and a force of 45 employees at work turning out the completed crown fenders with the exception of the enamelling. The main building of the new plant is 302 feet long by 60 feet wide and of modern brick construction. An addition running at right angles to the main building is 105 feet long by 56 feet wide and is designed to contain enamelling ovens.

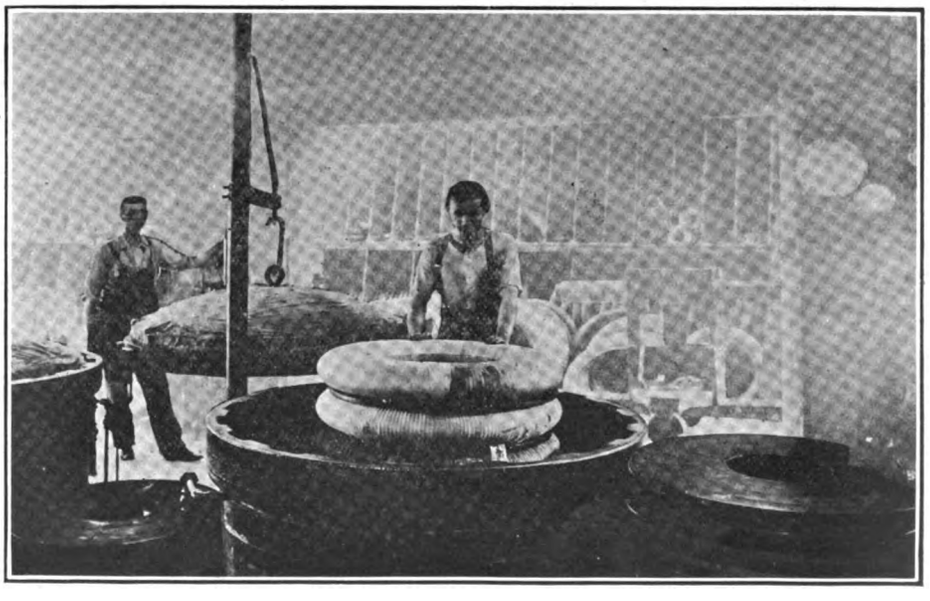
The Fostoria Light Car Company, Fostoria, O., has made marked improvements in the construction of the Fostoria car, and at the same time there has been an advance in price. The touring car, which formerly sold at $675, has gone up to $735; the delivery wagon with open body is $695, and with closed body $715. The width of the rear seat in the touring car has been increased from 39 to 46 inches and the front seat from 37 to 42 inches. The rear axle is now full floating, ignition is Remy and the cowl board carrying the instruments is of wood with natural finish.

The Luck Tire and Manufacturing Company has been incorporated under Delaware laws with $500,000 capital stock and will manufacture the Luck Botherless tire in a plant in Jonesville, Mich., part of which plant has been leased to the Colonial Car Company. D. A. Walker is vice president and secretary, G. M. Walker is treasurer and C. J. Davis is general manager. The tire that is to be made has an extra thick tread, while the sides are protected by a steel flange, bolted on to the felloe. In addition to the tire the company plans to make inner tubes and accessories.

The Sewell Cushion Wheel Company, Detroit, Mich., has opened a factory branch at Baltimore, in the Continental building, under the management of O. H. Jones. The company now has branches in New York, Philadelphia, Chicago, Buffalo, St. Louis, Boston, Cleveland, Minneapolis, Los Angeles and Seattle.

The Westcott Motor Car Company has removed its factory and general offices from Richmond, Ind., to Springfield, O., in accordance with the plan announced a few weeks ago, to secure the enlarged facilities necessary for increasing the output. Allen H. Frost, formerly factory manager of the Detroit Wire Spring Company, has become manager of the service department. J. M. Rehe has been appointed Westcott auditor. J. B. Coyle has been placed in charge of the traffic and order departments.

The Heseltine Motor Corporation, New York City, has been organized with a capital of $10,000,000. This company is a successor to the Gadabout Motor Corporation and is planning a four-cylinder car. The company is looking for a factory site in Buffalo, N. Y., where local men are interested.



CURING TIRES IN THE FEDERAL PLANT.

The Process of Curing Tires Is Clearly Shown in the Above Illustration of a Scene in the Big Milwaukee Plant of the Federal Rubber Manufacturing Company—Wrapped in Canvas Tape, They Are Tightly Compressed Under Hydraulic Pressure, Placed in the Steel Molds Shown and Softened to Conform to the Mold by Live Steam for a Period of Three and One-Half Hours.

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BIG INTERESTS PROMOTE ELECTRIC VEHICLES.

National Organization, with Enormous Resources and Well Defined Policy, Will Carry on a Campaign to Educate the People to Economy of These Machines.

What is confidently expected to be one of the largest and most productive campaign ever conceived for the promotion of the automobile vehicle has been inaugurated by the Electric Vehicle Section of the National Electric Light Association. In one sense this may be regarded as a campaign, but it is more than that. It is the establishment of a policy that will be followed by the members of the association, and which will continue until there is satisfactory reason for changing, but even then the purpose will be maintained and the endeavors will be stimulated so that the results obtained will constantly increase, and this increment will be to the profit of the automobile vehicle industry as a whole.

The Electric Vehicle Association of America, which was merged with the

E. S. Mansfield, Boston, Vice Chairman Electric Vehicle Section, N. E. L. A.

P. D. Wagoner, New York, President General Vehicle Company, Member Executive Committe for Three Years.

National Electric Light Association in accordance with an invitation received at the annual convention held in Chicago in October, 1915, and which was accepted and ratified by the members of the association early in the present year, has not lost its identity and it has not been subordinated to the older and larger association because of the amalgamation.

The Electric Vehicle Association of America was originally organized to promote and stimulate the use of electric vehicles of all kinds, and its membership was composed of central stations, manufacturers and distributors of electric vehicles, equipment, accessories and similar interests. Its object was broadly promotive, in which all members cooperated, there being no anticipation or fear of competition, each concern or individual sharing generaly in the benefits that obtained with the development of a demand for vehicles, either for pleasure or for industrial use.

THE PRIMARY OBJECT.

The organization primarily sought to establish some common ground on which the central stations, vehicle manufacturers, and those directly or indirectly interested in production and distribution of electric energy and its use for power vehicles, could unite and systematically promote the electric truck or pleasure car. Prior to the organization of the association each vehicle manufacturer had undertaken to do individually what was purposed they as a body should attempt, and while each had met with more or less success there was no agreed system of attack or policy, and the activities were naturally confined to the communities in which the interests were strongest.

The organizers of the Electric Vehicle Association were broad gauge men. They believed in cooperation. They did not believe in destructive competition, but in constructive endeavor, and what they wanted to determine was a basis that would appeal to central stations and vehicle manufacturers alike and in which all would have confidence. They realized that to be successful the campaign must be national in scope and that once begun there ought to be continuous activity. The expectation was to have local activities so far as this could

Arthur Williams, New York, Member Executive Committe for Three Years.

Frank W. Smith, New York, Member Executive Committe for Three Years.

be provided for, because of the unwieldy character of an organization with widely scattered membership.

How the Association Expanded.

Shortly after the formation of the association a section was formed of New England members, and this was operated independently of but in harmony with the main organization, and following this similar sections were organized wherever there was a sufficient number of members to justify such a body. These were in most of the large commercial centres of the country, and from the Atlantic to the Pacific there being 17 in all, with a membership of 1128, there being representation in Canada, Australia, England, British Columbia, New Zealand, Brazil, Denmark, Germany, Scotland and South Africa, as well as in the Philippine Islands.

In the conventions of the association

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F. W. Frueauff, New York, Member Executive Committee for Two Years.

were brought together men of great capacity, who were interested in the work and who were enthusiastic of the future of the electric vehicle in its sphere of usefuiness. In the activities of the different sections there was always harmony. Every possibility for promotion and utilization of electric machines that could be practically applied was considered, and means were provided for extensive and intensive advertising campaigns. A publicity bureau was established and nothing was neglected that would educate the people to the actual worth of electric vehicles.

Why Amalgamation Was Made.

There could be but one result of this concerted endeavor, and that was to establish very conclusively in the minds of the executives of the central stations the possibilities of electric vehicles in the comunities in which they operate, and they were induced to make careful investigation of the conditions with regard to highway transportation,—two important subjects that has not generally been given consideration. Constructive endeavor developed that the field for electric vehicles had hardly been realized, even by those most active and best informed. Instead of the present, the future was considered, and then these interests, as units of the National Electric Light Association understood that there was every reason why that body should take up the work and place its resources and its organization at the command of the men who had for a number of years worked unceasingly for the promotion of electric vehicle use.

There was but one way that this could be accomplished, and that was by amalgamation,—to enroll in the membership of the National Electric Light Association these men, to let them continue the work they were engaged in, but in a larger and broader way, and to give them the support that would make possible systematic promotion work throughout the nation. The proposition was accepted and the unification was effected. At the 38th annual convention of the National Electric Light Association at Chicago about 6000 delegates were present, and three sessions were held by the Electric Vehicle Section. There was much enthusiasm manifested, and while there was careful attention given to subjects inherited from the previous conventions of the Electric Vehicle Association, the main proposition was the future, and what would best serve the interests of all concerned.

A. Jackson Marshall, Secretary, Electric Vehicle Section, N. E. L. A.

James H. McGraw, New York, Member Executive Committe for One Year.

The Officers for 1916.

At this meeting the section elected officers, this consisting of the following: Chairman, E. S. Mansfield, Edison Electric Illuminating Company of Boston, Boston, Mass.; vice chairman, George B. Foster, Commonwealth Edison Company, Chicago, Ill.; treasurer, H. M. Edwards, New York Edison Company, New York, N. Y.; secretary, A. Jackson Marshall, New York, N. Y.; Executive committee, for three years, Walter H. Johnson, Philadelphia Electric Company, Philadelphia, Penn.; Arthur Williams, New York Edison Company, New York, N. Y.; Frank W. Smith, United Electric Light & Power Company, New York, N. Y.; P. D. Wagoner, General Vehicle Company, Long Island City, N. Y.; for two years, Charles Blizard, Electric Storage Battery Company, Philadelphia, Penn.; Frank W. Frueauff, New York, N. Y.; G. A. Freeman, Walker Vehicle Company, Chicago, Ill.; Charles A. Ward, Ward Motor Vehicle Company, Mount Vernon, N. Y.; for one year, H. G. Thompson, Edison Storage Battery Company, Orange, N. J.; E. P. Chalfant, Anderson Electric Car Company, New York, N. Y.; James H. McGraw, New York, N. Y., and H. W. Suydam, Toledo, O.

Charles Blizard, Philadelphia, Member Executive Committee for Two Years.

The 17 sections are each presided over by a vice chairman, and each has its own organization. The work of these sections is continued and new sections will be organized as conditions justify.

Horace W. Suydam, Toledo, O., Member Executive Committee for One Year.

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NEW YORK AND DETROIT EXCHANGE QUOTATIONS.

Condition of Automobile Securities and General Material Markets as Reported at the Middle of Last Month and on the Corresponding Day of this Month.

The tabulations following show the advance or decrease in the quoted stock exchange prices of the several active motor vehicle and kindred securities, and of the change in prices of the general material market, as it relates to the motor car industry.

	June 8		July 13	
	Bid	Asked	Bid	Asked
Ajax Rubber Co.	68	69½	64½	65½
J. I. Case, pfd.	88	90	82	90
Chalmers Motor, com.	200	210	173	178
Chalmers Motor, pfd.	99	101	98	101
Chandler Motor Co.	262	264	110	111
Chevrolet Motor, pfd.	262	264	228	230
Electric Storage Battery	64	66	..	..
Firestone Tire, com.	840	860	880	..
Firestone Tire, pfd.	113	114	112	114
Fisk Rubber Co., com.	..	..	..	160
Fisk Rubber Co., 1st pfd.	..	..	114	120
Fisk Rubber Co., 2nd pfd.	..	..	120	..
General Motors, com.	548	565	470	541
General Motors, pfd.	115	117	110	112
Goodrich, B. F., com.	197	200	74	74¾
Goodrich, B. F., pfd.	105¼	106	113⅛	113½
Goodyear Tire, com.	197	200	225	230
Goodyear Tire, pfd.	105¼	106	105	107
Grant Motor Car Co.	12	13	11	12
Hupp Motor, com.	..	..	7½	7¾
Hupp Motor, pfd.	..	..	80	110
International Motor, com.	10	14	..	9
International Motor, pfd.	21	27	..	25
Kelly-Springfield Tire, com.	74½	75	69	71
Kelly-Springfield Tire, 2nd pfd.	..	..	..	..
Lee Rubber and Tire Corp.	..	..	46¾	46½
Maxwell Motor, com.	85¾	86	78	78¼
Maxwell Motor, 1st pfd.	89¼	89¾	84½	85
Maxwell Motor, 2nd pfd.	58	58½	54	56
Miller Rubber, com.	..	..	225	230
Miller Rubber, pfd.	104	106	104	106
New Departure, com.	275	..	..	..
New Departure, pfd.	112	115	..	..
Packard Motor Car, com.	240	..	..	180
Packard Motor Car, pfd.	101	105	100	104
Paige-Detroit Motor Car	..	..	..	50
Peerless Motor Truck Corp.	25	26	24	25
Portage Rubber, com.	110	113	117	120
Portage Rubber, pfd.	112	114	118	119
Regal Motor Truck Co.	22	..	..	..
Reo Motor Car	37	37½	36½	37
Reo Motor Truck	44½	45	43	44
Standard Motor Co.	..	..	5	7
Stewart-Warner, com.	86	90	100	102
Stewart-Warner, pfd.	108	110	..	..
Studebaker, com.	141½	142½	132⅝	132¾
Studebaker, pfd.	108	112	108	110
Swinehart Tire	83	84	63	63⅜
Texas Company	190	192	..	..
United Motor Corp.	88¾	89	86	88
U. S. Rubber, com.	55¾	56¼	52½	53
U. S. Rubber, 1st pfd.	109½	110	110⅛	110⅞
Vacuum Oil	248	253	..	..
White Motor Co.	57⅞	58⅛	54¼	55
Willys-Overland, com.	310	320	74¾	75
Willys-Overland, pfd.	111	112	107	109

DOMESTIC CRUDE OIL PRICES.

The prices of crude petroleum at the wells during the middle of the month of July were:

Pennsylvania dark	$2.60	Corsicana heavy	$.80
Mercer black	2.10	Electra	1.55
Cabell	2.12	Henrietta	1.55
New Castle	2.10	Caddo, La., 38°	1.55
Corning	2.10	Caddo, La., heavy	.90
Wooster	2.00	Plymouth	1.68
North Lima	1.78	California oil	58a59
South Lima	1.73	Healdton	.80
Indiana	1.58	Moran	1.55
Princeton	1.82	Strawn	1.55
Somerset 32°	1.95	Thrall	1.55
Ragland	.90	De Soto	1.45
Illinois above 30°	1.82	Crichton	.90
Kan. & Okla.	1.55	Canada	2.13
Corsicana light	1.55		

Naphtha.

	10-gal. drums	
	Under 100 cases	100 cases and over
Benzine, 59-60°	34¼	33¾
73 a 76°	34½	34
Stove	38	37½
Auto, 68-72°	42	41½

	In cans and cases		
	Under 100	100-199	200-299
Benzine, 59-62°	29½	29¼	29
73 a 76°	37¼	37	36¾
Stove	29¾	29½	29¼
Auto, 68-72°	33¼	33	32¾

NEW YORK CITY PRICES.

New York City prices for petroleum and its products were:

Petroleum.

Crude, barrels, a gallon	15a18	Fuel, 31°	9
Refined, barrels	12	Fuel, 34°	9½
Tank wagons delivery	9		

Naphtha.

Auto in wood	23	V. M. & P. deod., in steel	23
Auto in garages, steel bbls.	24	V. M. & P. deod., in wood	26

Gasoline.

Gas machine, steel	37	68-70° steel	29
73-76°	32	68-70° wood	32
73-76° wood	35		

GENERAL MARKET PRICES.

	June 14	July 14
Antimony	21½	15½
Iron, foundry, S., ton	14.75	15.00
Iron, foundry, N., ton	19.00	19.50
Iron, Bessemer, ton	20.50	20.50
Steel, Bessemer, ton	45.00	40.00
Beams and chan., 100 lbs	2.669	2.669
Copper, elec., 100 lbs	27.50	26.50
Copper, lake, 100 lbs	27.50	26.50
Lead, 100 lbs	6.80	6.40
Tin, 100 lbs	43.50	38.50
Petroleum, Penn., cr., bbl	2.60	2.60
Petroleum, Kan., cr., bbl	1.55	1.55
Linseed oil, raw	66	69
Rapeseed oil, refined	92	92
Lard oil, prime	1.05	1.10
Fish oil, Menhaden, br.	55	55
Sulphuric acid, 60	3.00	3.00
Cyanide potash, lb	..	..
Cottonseed oil, bbl	11.00	10.78
Silk, raw, Italy	6.10	5.90
Silk, raw, Japan	5.55	5.40
Rubber, fine, up-river, Para	64	68
Tire, scrap	5¾	5¾
Steel, open hearth, ton	42.00	42.00

FOREIGN TRADE OPPORTUNITIES.

(Address Bureau of Foreign and Domestic Commerce, Washington, D. C., Giving Number, Which Will Forward Correspondence, Unless Otherwise Stated.)

Towboat, Automobiles, Etc. No. 21,650—The bureau is in receipt of a letter from a commission house in the United States advising that one of its agents in southern Mexico, who is now in the United States, is in the market for a towboat, measuring from 80 to 90 feet in length, 20 feet beam, and seven to eight feet in depth; boat to be operated by crude oil engine of 150 to 200 horsepower. Proposals for a second-hand steel hull will be considered. Cash will be paid with order, it is stated. The man also desires to secure the exclusive agency for a medium priced automobile, for automobile tires and for a crude oil or coal gas engine locomotive of a 50-centimeter gauge (19.6 inches), for hauling from 40 to 50 tons over a level grade.

Steel Wire, Automobiles, Etc. No. 21,670—An American consular officer in Norway reports that an agent in his district is in the market for steel wire for can openers and nails. The agency for an automobile not already represented in that country is also desired. The man is particularly interested in electric and gasoline trucks. Definite terms should be stated. Correspondence may be in English. Reference is given.

Track Automobiles and Printing Machinery. No. 21,693—A commercial attache of the Department of Commerce in a Latin American country reports that a railway company has called for bids on eight track automobiles and on printing machinery. Further information may be obtained from the bureau or its district offices.

Motor Street Sweepers. No. 21,724—An American consular officer in the United Kingdom writes that a municipality contemplates the purchase of a vacuum motor road sweeper, about 60 horsepower, driving a brush seven feet six inches in length and four feet in diameter. Additional machines will probably be purchased later.

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ACTIVITIES OF MEN YOU KNOW.

News of Prominent Members of the Manufacturing, Distributing and Retailing Motor Vehicle Trades.

C. A. Luckey has been appointed resident manager of the Edison Storage Battery Supply Company at New Orleans, La. Mr. Luckey is a graduate of Franklin Military Academy, Franklin, N. Y., and also of Bliss Electrical school, Washington. He was connected with the Western Electric Company and left there to go with the Safety Car Heating and Lighting Company.

Edward Waldman has been appointed branch manager of the Minneapolis branch of the Imperial Auto Supply Company. He is one of Max Zeisler's chief lieutenants.

Edward F. Bayne has joined the sales forces of the Redden Motor Truck Company with Michigan as his territory.

Frank J. Sieght, former manager of the Elyria factory of the Willys-Overland Company, has been appointed general manager of the Willys-Overland, Ltd., of Toronto, Canada.

H. G. Haskell is now a sales representative of the Redden Motor Truck Company for the State of Ohio. He was former president of the Velie Motor Company.

Frank H. Isle has retired from the Jiffy Curtain Company, disposing of his interests to R. C. Mason, who becomes president and treasurer. Mr. Isle was president of the company and also inventor and patentee of the Jiffy curtain.

F. E. Castle has been placed in charge of sales in the wire wheel department recently by the Haynes Wheel Company, Jackson, Mich. H. W. Kyte, formerly with the Houk Manufacturing Company, will join Mr. Castle in the firm of Castle & Kyte, with headquarters at 872 Woodward avenue, Detroit, in handling this line of wheels.

Alton J. March has succeeded Alfred Reeke as president of the Milwaukee Automobile Dealers, Inc., following the resignation of the latter, who removed to Kenosha, Wis., to become general sales manager of the Thomas B. Jeffery Company. Mr. March is connected with the Curtis Automobile Company in Milwaukee.

H. T. Dunn, president of the Federal Rubber Company of Massachusetts, that has acquired the plant of the Federal Rubber Manufacturing Company of Cudahy, announced that the business is to be extended and several buildings will be erected.

E. H. Menderson, formerly connected with the service department of Dodge Brothers, has been made sales man in the Philadelphia branch of that company under Hanson Robinson.

John J. Hagel has become the president of the Overland-Dubuque Company, Inc., Dubuque, Ia., the new organization formed to distribute Overland and Willys-Knight cars in the surrounding territories. He was formerly a dealer in Overland cars at New Albany, Ind.

C. Arthur Benjamin has been appointed sales manager of the Ross Automobile Company, Detroit, Mich. His career with the industry dates back to 1898, when he took the agency for the Stanley steamer at Syracuse, N. Y. The Stanley steamer was taken over by the Locomobile company and then he was made southern sales representative. In 1902 he became sales manager of the H. H. Franklin company, retaining this connection until 1906, when he became sales manager of the Babcock Electric Company at Buffalo. Later he was connected with the Aerocar Company, Detroit, and for six years following that handled the Packard in Syracuse. In 1913 he became sales manager of the automobile department of the American Locomotive Company.

Herbert J. Flint has joined the J. C. Wilson Company as general sales manager. He will have full charge of the distribution of the Wilson truck. Mr. Flint was eastern sales manager for the Smith Form-a-Truck, and prior to this was with Thomas J. Hay, distributor of Hupmobile and Chandler cars in Chicago.

D. A. Burke has been appointed local branch manager of the Buick company, succeeding E. T. Strong. He has been with the company since 1913 and was manager of the Cleveland branch until he disposed of it to the Ohio Buick Company. He has specialized in organization work at the Buick plant and has also assisted Mr. Strong in the work of organizing the southern portion of the Chicago territory.

E. C. Jewitt has been appointed supervisor of service in the Philadelphia branch territory for the Studebaker Corporation, succeeding H. F. Hartman, who has been transferred to Detroit. Mr. Jewitt previously acted as service representative in Indianapolis and Boston.

Frederick McGregor has joined the sales force of the Chevrolet Motor Company of Boston, Mass.

Herbert J. Ganahl, formerly in the lumber business, is now with the Frye Motor Car Company, Saxon distributor in St. Louis, Mo.

R. J. Starr, formerly with the Ford St. Louis house, has joined the sales staff of the Overland Automobile Company, St. Louis.

E. E. Denniston has been appointed wholesale sales manager of the Overland Automobile Company of St. Louis to succeed H. A. De Witt, who becomes Overland distributor at Little Rock, Ark.

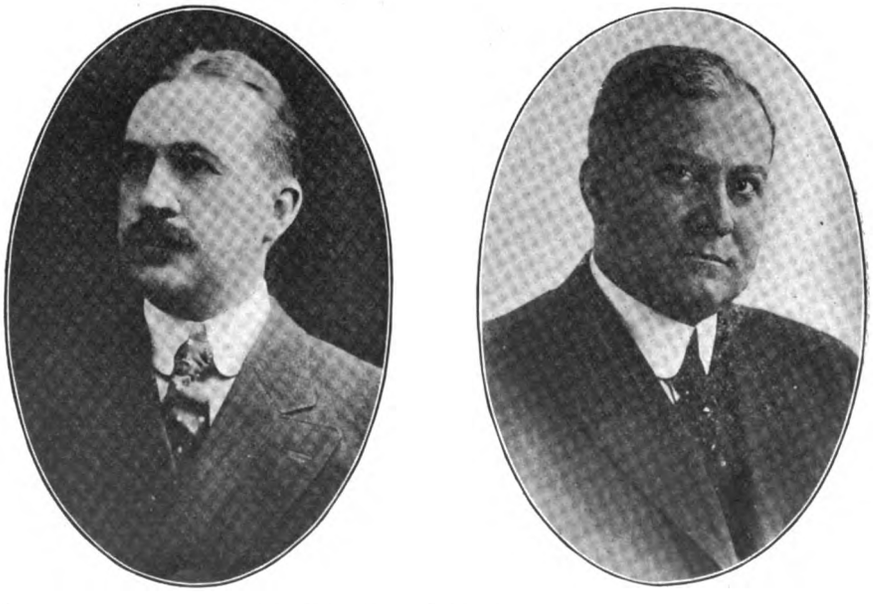
Ben Edwards, formerly expert at the Willard Storage Battery plant, is now in charge of the service department for batteries for the Battery Service Company, 23rd and Olive streets, St. Louis, Mo.

A. S. Chisholm is manager of the A. S. Chisholm Company, distributor for Chalmers cars in San Francisco, Cal. He has been associated with the L. H. Rose-Chalmers Company and is one of the best known automobile men in the West.

T. V. Murphy, who has been head of the used car department of the Chicago Marmon branch, has resigned and accepted a similar position with the Harry Newman Company, Chicago.

John C. Harris has been appointed service manager of the Gibson Company, Overland and Willys-Knight distributor in Indianapolis, Ind. He was until recently an instructor of electricity in the Technical high school there.

William Johnson is now connected with the newly formed McCoy Motor Supply Company. He was for several years the Pacific Coast representative of the Lovell-McConnell Manufacturing Company.



Winthrop and W. J. Burdick, Who Have Sold Their Interests in the New Era Engineering Company, Joliet, Ill, With Which They Have Been for Six Years. Winthrop Burdick Was Treasurer and Sales Manager and W. J. Burdick Was Secretary and Purchasing Agent of the Company. They Will Introduce in the Near Future a New Car, Which Will Be of Sensational Design.

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W. H. Van Dervoot, president of the Moline Automobile Company, Moline, Ill., has been elected president of the National Trades Association, which has headquarters at New York City.

W. H. Van Dervoot, President of the Moline Automobile Company.

Tom Botterill, Hudson distributor in Colorado and Utah, has decided to open a Detroit office. This office will then be in closer touch with the factory of the Hudson Motor Car Company. It will be in charge of A. S. Brodhead, distributing manager for Mr. Botterill, and may be retained permanently if the experiment proves a success.

Aage Lowener of Lowener & Co., Stockholm, Sweden, has taken the agency for Standard trucks in that country.

L. W. Bitting has been appointed managing director of the Studebaker Corporation of Australasia, with headquarters at Sydney, Australia. The post is the second in importance in the Studebaker Corporation's foreign connections, being exceeded in size only by the London branch, and the fact that Mr. Bitting was selected to fill the post speaks volumes for the capacity he has shown during his service with the company. He succeeds Henry Kennedy as managing director of the Australasian company.

Barend J. Dam, a business man of Holland and also an automobile dealer, is in this country and purchased, while in Indianapolis, 10 Pathfinder cars from the Pathfinder company for shipment to the Dutch colonies in Asia.

Allen Loomis has resigned from the Packard Motor Car Company, Detroit, and will devote his attention to consulting engineering work. Mr. Loomis has been associated with the company for many years and is credited with 39 patents, many of which are embodied in current Packard cars. He was operated upon recently for appendicitis and is now resting at his summer home at Higgins lake. He will begin his new work in September.

Hugh R. Perry has been made secretary to A. G. Seiberling, general manager of the Haynes Automobile Company, Kokomo, Ind. E. C. Miller of the sales promotion bureau succeeds him as assistant sales manager. Frank E. Russell, formerly in the sales department, has been placed in charge of the sales promotion work.

A. E. Morrison has been appointed manager of the San Francisco distribution branch of the Hupp Motor Car Company, Detroit, and will have charge of distribution in California, Arizona and Nevada. He was formerly a special representative for the Maxwell Motor Company and before that was Pacific Coast representative for Nordyke & Marmon.

S. E. Comstock, general sales manager for Harry Newman, Inc., has been made vice president. The company is the Chalmers distributor for Wisconsin, with headquarters in Milwaukee, and for northern Illinois, with headquarters in Chicago.

O. C. Wise has been appointed manager of the Havana, Cuba, Reo agency by Gaston, Williams & Wigmore, New York City, export agents. He spent some time at the Reo plants in Lansing, Mich., before sailing for Cuba.

Blythe H. Henderson has resigned as chief of the motor division of the exposition in San Diego, Cal. The exhibit included nearly every well known make of car.

Edward F. Daly has planned to handle the sales of the Rockwell-Drake Corporation of Plainville, Conn. The company was formed several months ago and is now preparing to enter actively into the manufacture and sale of ball bearings. His office will be located in the United States Rubber building, New York City. He was formerly a member of Barthel, Daly & Miller.

E. W. Gleckler is now treasurer of the newly organized Willys-Overland Company of California, succeeding A. R. Theisen, who has been removed to Seattle to take the treasurership of the Overland-Pacific Company, which handles the distribution of the Willys products in Oregon and Washington.

E. W. Croman is now identified as director of sales in the recently organized Deneen Motor Company of Cleveland. He was formerly director of sales and advertising for the Elgin Motor Car Corporation of Chicago and was a member of the original Saxon organization.

Wallace C. Hood, formerly general sales manager for the Chalmers Motor Company, Metzger Motor Car Company and the Empire Automobile Company, has formed the Wallace C. Hood Service Bureau and has opened offices at 637, 638 and 639 Dime Bank building, Detroit. It is the plan of the new enterprise to act as personal representative for automobile manufacturers and automobile distributors from all parts of the world. Mr. Hood has associated with him several well known men in the industry and is already representing many of the best known automobile manufacturers and distributors in the country.

George F. Farasey, formerly connected with the Kelly Tire Company's Boston and Cleveland branches, is now office manager of the St. Louis branch. He succeeds C. R. Higgason.

Forrest J. Alvin, formerly president of the New Era Engineering Company, has organized a truck concern in Joliet. Mr. Alvin realizes the great opportunity for marketing a truck of light capacity. He has been general sales manager of the Wheeler & Schebler Company and also sales manager of the Kingston products.

Emlin S. Hare is the new manager of the Packard Motor Car Company of New York. He succeeds Edwin B. Jackson, who has resigned to accept an offer from the Willys-Overland Company. Mr. Hare is well equipped to assume the responsibilities relinquished by Mr. Jackson. He was formerly vice-president of the Commercial Truck Company of America.

B. C. Swinehart has been placed in charge of the solid tire sales of the Republic Rubber Company, Youngstown, O. For the past three years he was manager of the Philadelphia branch of the company, and has been identified with the tire business for 15 years and is responsible for many inventions and improvements along tire lines. Before going to Philadelphia, he was manager of the Cleveland branch of the Republic Rubber Company and manager of the truck tire department at the factory. Mr. Worthington, assistant manager of the Philadelphia branch for the past five years, succeeds Mr. Swinehart.

George H. Smith has been appointed sales manager of the Mercer Automobile Company, Trenton, N. J. He has been with the company for several months, and has been with the White and Peerless sales organizations in the past.

S. H. Humphrey has taken charge of manufacturing at the Briscoe Motor Corporation, Jackson, Mich. Mr. Humphrey, who recently resigned as vice president of the Chalmers Motor Company, has had long experience in this branch of the industry He was with the Hupp Motor Car Company over two years before joining the Chalmers company as works manager.

S. H. Humphrey, Briscoe Motor Corporation.

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Will It Pay To Incorporate Your Business?

By Elton J. Buckley.

I can answer this letter so as to interest every reader hereof:—

Albany, N. Y.

Please advise whether you would think it advisable for me to incorporate my business. I do a wholesale and retail business, established about 18 years. Do about $100,000 yearly, on a sound basis. The business is making money and would be attractive to investors, though I do not care to take in partners. It is now a one-man business and I do not want it to die when I do, so thought incorporating it might be the best way of continuing. Would of course have to take some one else in, but would expect to control it as long as I lived. Have thought much about the question of incorporating, and have gotten some opinions on it and other men's judgment, but do not feel quite satisfied in my own mind as yet. Have read many of your articles and think you might be able to help. Have no objection to your publishing this letter, but do not give the name.

E. N. O.

The subject of this article will therefore be, "does it pay, in the average case, to turn a small or a moderate sized business into a corporation? Generally speaking, my own judgment is that it does not, though there may be conditions under which it does. This correspondent mentions one of them. Where a man is the sole owner of his business, and is growing old, or if he wishes to ease up from some of the hard work, and wants to capitalize and perpetuate the name and reputation of the business, the thing to do is to incorporate it. In fact incorporation is practically the only way in which he can accomplish these purposes completely, unless he has a son or sons to turn the business over to.

Generally speaking, the incorporation of an average business offers five advantages and an equal number of disadvantages. The advantages are as follows:—

1. The private assets of the owner or owners are not responsible for the corporation debts.

2. One's interest in the corporation can be freely sold without consulting one's fellow-owners, if there are any, while in a partnership a partner may not dispose of his interest without the consent of his fellow-partners.

3. A corporation is not dissolved by the death of any stockholder, while a partnership usually is, and an individual business simply descends to the owner's heirs and may soon disintegrate.

4. The stockholders of a corporation are not at the mercy of a single stockholder, as the members of a partnership are at the mercy of a single partner.

5. A corporation has perpetual life, while a partnership or an individual business may be dissolved by any one of several events.

The disadvantages are as follows:—

1. The expense of incorporating, and particularly the greater expense of maintenance, as trading corporations are almost always subject to special corporate taxes, in addition to all other taxes to which ordinary mercantile houses and individuals are liable.

2. Curtailed credit. The financial standing of a partnership or individual business is measured by the value of the partnership assets, or the assets of the individual business, plus the value of personal assets of all the partners, or the personal assets of the individual owner. This is so because the private assets of the partners or owner are responsible for the firm debts. With a corporation only the corporate assets are responsible for the corporate obligations.

3. The minority stockholder is pretty nearly at the mercy of the majority interest, not only as to the management of the business but as to the declaration of dividends. The rights and powers of the member of a partnership are much wider than those of a minority corporate stockholder.

4. A corporation is constantly under the supervision of the State, and if guilty either of sins of omission or commission, may be fined or even deprived of its charter.

5. A corporation is also subject to the provisions of a usually extensive and complicated code of laws, which require its business to be conducted in a certain way, its meetings and elections to be conducted after a certain prescribed form, and so on. This sometimes becomes irksome.

To say a little more about these, the fact that in a corporation the personal assets of the owners are not liable for the corporation debts is a great protection—to the owners—but it has a directly curtailing effect on the concern's credit. An individual owner of a business which has tangible assets of $10,000 will usually be rated at much more than $10,000 if he personally has assets outside of that, for ratings of businesses of that kind always include the personal holdings of the owners, they being responsible for the debts of the business. But in the case of a corporation with assets of $10,000, that would be its rating even if the stock were held by millionaires. I have known of cases where owners of businesses with good credit incorporated them without considering the probable curtailing of credit, and found themselves seriously embarrassed, especially with the banks from whom they borrowed regularly. For the first time they were required to get another name on their business paper.

One of the greatest differences between a partnership and a corporation is the difference in the degree of liability in which owners or partners can be involved by the acts of their fellows. The acts of a corporation stockholder, director, employee, or even officer, bind the corporation only when he had actual authority to do them, while the acts of a partner usually bind his fellow-partners whether he had authority to do them or not.

Summing it all up, incorporating is the thing to do, when for any reason a man wants to sell a share in his business and still control it, and when the advantages of doing this outweigh the disadvantages of doing business in the corporate way. He cannot sell a share to a partner and still control it, for as I have said, he is to a considerable extent at this partner's mercy.

(Copyright by Elton J. Buckley.)

There is a great need among dealers, distributors and garagemen for practical and authoritative information upon such legal problems as arise in business every day; hence the inauguration of this legal department in this magazine. Mr. Buckley is a member of the bar in the state in which he is resident and is counted among the leading members of his profession. In addition to contributing a special article of general interest each month he will answer any special question which a subscriber may desire information upon, either by mail or through the columns of this department. It is essential that the inquirer sign his name to each inquiry but only the initials or a pseudonym will be published. The service is free of charge to subscribers. Inquiries should be addressed to the Legal Department, Accessory and Garage Journal.

STATUS OF SALESMEN.

A case was recently brought in the Indiana courts by an individual against a motor car manufacturing company for damages as the result of a collision of one of its cars driven by a salesman. The decision given in the appellate court held that the salesman selling automobiles on commission only was not the company's agent and therefore the defendant was not responsible.

LENNON PROTECTOR SUIT.

Recently in a United States District Court, Judge L. Hand presiding, a suit in equity which was brought for the purpose of deciding the Lennon light protector was an infringement upon certain other patents and if the sale of same should be enjoined was dismissed in favor of the defendant. The suit was filed against J. H. Faw, Inc., 41 Warren street, New York City, distributor for the Lennon Manufacturing Company, maker of the device. Before the decision in favor of the defendant was rendered, the Lennon and Faw companies assured dealers and other purchasers that the device was not an infringement and that the companies had a perfect right to manufacture and sell the protector. The decision fully verifies their statements and assurances.

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PRACTICAL MOTOR CAR REPAIRS IN THE GARAGE.

HAND-CLEANING PASTE.

The main ingredients of hand-cleaning pastes are soap and grit. Any soap may be used, but a white soap is preferable. It is not advisable, however, to use castile soap, as it does not form as firm a paste as a soap made of animal fats. Regarding the grit, any substance, from emery to fine sand, may be used. It is always good policy to keep a supply of good hand paste in the garage. A satisfactory formula is to dissolve 1½ pounds of white soap in the least possible quantity of hot water and as it cools stir in a half pound of fine sand.

CLEANING CHAMOIS SKINS.

Chamois skins quickly become dirty and coated with grease. They may be restored to a serviceable condition by first removing the caked matter with a stiff brush, then covering the skin with soft soap and allowing it to remain immersed for several hours in a bath of warm water to which a little washing soda has been added. Remove and rub the chamois well, after which wash it in a weak solution of soda, soft soap and water. Rinse well and hang up to dry.

GRINDING IN PETCOCKS.

A slightly worn petcock in the gasoline line will allow considerable fuel to leak away if the defect is not promptly attended to. Grinding the male member in its seat with a paste made of powdered glass and lubricating oil is generally an effective remedy. If this work is to be done by the usual hand method considerable time will be required. In Fig. 1 is illustrated a device for facilitating the operation.

The clamp consists of two pieces of sheet steel about five inches long, ¾ inch wide and ⅛ inch thick. The ends are ground to fit the chuck of a breast drill, while a V slot is ground in the jaw ends. The construction is extremely simple, the petcock being held firmly in the auxiliary jaws by a thumb screw.

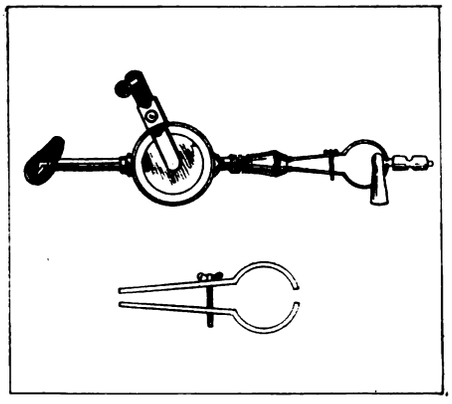

Fig. 1—A Tool Designed to Facilitate the Labor of Grinding in Petcocks, Showing the Tool Separate and Assembled in a Breast Drill.

By rotating the handle of the drill the valve member may be ground in easily. The direction of rotation should be reversed frequently.

WRISTPIN REMOVER.

In Fig. 2 is presented a wristpin drawing tool, which was constructed by a repair man during his idle moments. It consists of a clamp made of band

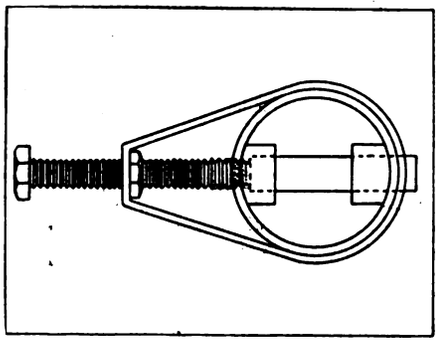

Fig. 2—A Practical and Easily Made Wristpin Removing Tool, Showing It in Position on the Piston.

steel, the ends of which are welded together. The flat side of the clamp is drilled and carries a threaded bolt and nut. Diametrically opposite this hole is another of sufficient size to allow the wristpin to be forced through. The action is obvious. The clamp is slipped over the piston, and by turning the head of the bolt with a wrench, considerable pressure is brought to bear against the wristpin and it is gradually forced out of the top connecting rod bearing without injury to the piston.

SIMPLE TEST FOR WATER.

Radiator manufacturers advise that hard water in the cooling system is detrimental, because when heated the fluid produces a scale which deposits in the form of fine, brick colored powder. This substance clogs the fine passages and greatly impairs the cooling efficiency. A simple test to determine the nature of water is to make a soap solution and fill a glass vial about half full. Then add a few drops of the water that is to be examined. If the fluid is hard the solution will turn a milky color or will curdle.

CONVERTING TERMINALS.

Frequently the secondary cables leading to the spark plugs are equipped with closed ends. This necessitates the use of plugs which have the screw or nut type of terminal. If the clip type is used it is a good plan to cut a V slot in the closed end terminal of the secondary cables. This can be accomplished with a pair of cutting pliers. This arrangement does not prevent the terminal being used with the screw type of spark plug terminal.

CRANKSHAFT LAPPING TOOL.

When the lower connecting rod bearings do not receive sufficient lubrication the crankshaft journals are apt to become scored, especially when bronze bearings are used. Journals in this condition should be trued and the tool shown in Fig. 3 A will greatly facilitate this operation. It consists of two blocks of wood about the same width as the journal and of sufficient length so that when in operation the cranks will not touch the ends.

Each section of the wood is bored to suit the diameter of the work and the two pieces joined at the ends with a small hinge. The crankshaft is then placed in the lathe and a piece of fine emery cloth inserted in the hole of the tool. Place the tool over the journal and by operating the lathe at a medium speed, the unevenness of the metal will soon be removed.

ALIGNING GAUGE.

To facilitate steering and insure against excessive tire wear, it is essential that the alignment of the front wheels be tested periodically. In Fig. 3 B is illustrated a type of gauge which has given satisfactory service for a number of years in a large Rhode Island garage. The arms or extremities are made from pieces of ½-inch square steel, and the two guides are blocks of steel which have been drilled and then broached or filed to receive the arms. As can be seen in the illustration, one of the blocks is pinned to the end of the lower arm. Any adjustment of the gauge can be made by loosening the winged nuts at the top of the guides and moving the arms in or out as the case may require. The ends of the arms are ground to a point so that the measurement may be obtained to a high degree of accuracy.

USEFUL CEMENTS.

Broken celluloid articles can be mended by using a mixture of three parts alcohol and four parts of ether. Preserve this in a well corked bottle. Paint the

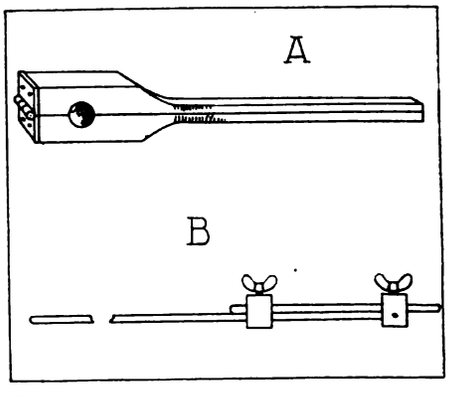

Fig. 3—A, Home-Made Crankshaft Lapping Tool; B, Simple Aligning Gauge with Which Measurements Can Be Obtained with Great Accuracy.

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The Allen Classic

Something **Different** to meet Your Demand

—*and*

CLASSIC is the name of *all* names for this truly distinctive car.

Find, if you can, more beauty of line and finish than is embodied in this aristocrat of cars, as faithfully illustrated on the next two pages.

There are discriminating buyers in your town who will be delighted with this masterpiece of automobile design and finish—a combination which has no equal.

$850 F.O.B. FOSTORIA, OHIO.

The Allen Motor Co.

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The Allen Classic

A handsome, distinctively finished, well built motor car

"*Beautiful*"—with emphasis. That's what everybody say when they see this car.

And then, when they have finished admiring its *outward* appearance, they find equal satisfaction in its mechanical construction and performance.

While the Allen Classic was primarily designed with an idea of producing a strikingly handsome car, at the same time bear in mind that in this instance, beauty is more than skin deep.

The same chassis, the same powerful motor, the same long underslung rear springs, the same simplicity and sturdiness that have made an enviable name for the Allen 37, are embodied in the Allen Classic.

Digitized by Google

Beautiful, comfortable, efficient
The height of motor car value

F. O. B.
Fostoria, Ohio
$850

While beauty in a motor car is a great source of satisfaction, it cannot be complete unless there be an abundance of comfort and uninterrupted service.

And in *these* days, to have comfort it is not necessary to buy high-priced cars. Scientific balancing of parts, proper spring suspension, correct body building and upholstering, have most to do with comfort.

In the Allen Classic you find these essentials combined in an unusually efficient manner, with the result that comfort is a big part of the value in this splendid car.

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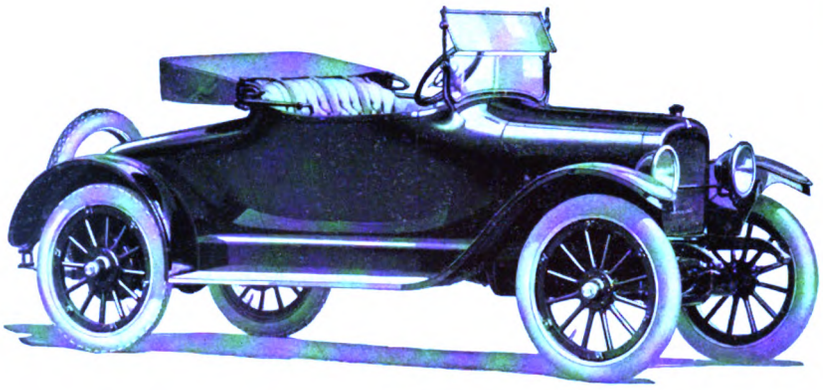

The Allen Classic Roadster

Low-priced roadsters with good body lines are few. Just a glance at the Classic Roadster is sufficient to establish it as a car sure to find favor among professional men and others to whom a good roadster is a necessity.

The gracefully curved rear deck is provided with a long door hung with concealed hinges and flush water-proof joints, giving an unusually neat appearance. The compartment has plenty of room for two or three extra casings or suit cases.

Summing it all up the Allen Classic possesses in full measure: Distinctive beauty, abundant power, unusual comfort, ample room, exceptional economy, light weight, sturdiness and durability, and is backed by a strongly financed company of twenty-five years' standing and high credit rating.

The Allen Classic is now being delivered to Allen dealers throughout the country. Due to our recent big increase in production, there is an opportunity for a few more live dealers to secure the Allen line where it is not already represented.

The Allen Motor Company

407 Allen Bldg., Fostoria, Ohio, U. S. A.

High Spots

in the

Allen Classic Specifications

Powerful four-cylinder motor, cast enbloc, 3¾ x 5 inches, 37 H. P.

Two-unit electric system for starting, lighting and ignition

Easy working clutch, smooth in action

Over-size bearings throughout

All moving parts enclosed

55-inch underslung rear springs

Full floating pressed steel rear axle

112-inch wheel base

Boat-shaped body with ample leg room front and rear

Spanish brown upholstering

Smoke brown finish on body, hood and wheels; fine gold striping.

This smoke brown finish is not only exceedingly beautiful and distinctive, but very practical, as it does not show dust and dirt as readily as the darker colors.

Leak-proof top material

32 x 3½-inch tires non-skid in rear

Weight, 2300 pounds

Equipment, high grade and complete

Send for complete literature on this and other models

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broken edges of the celluloid to be repaired until the material softens. The parts are then firmly pressed together and the pressure allowed to remain on them for at least 24 hours.

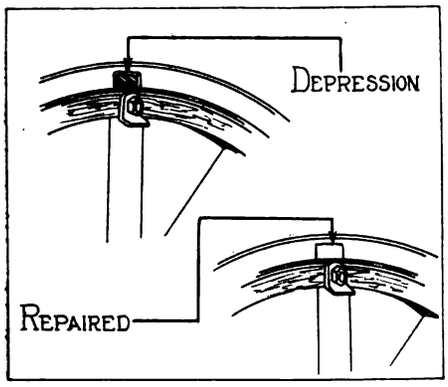

Fig. 4—Demountable Rim Repair, the Top Sketch Illustrating the Worn Part, and the Bottom View How It Can Be Repaired.

A suitable cement for hard rubber articles is made by dissolving one part of gum camphor in four parts of alcohol. To this solution add an equal weight of shellac. The cement is applied warm and it should not be disturbed until thoroughly hard. Another method is to melt together equal parts of gutta percha and asphaltum. This mixture is applied while hot and the parts are pressed together while cooling.

CRANKSHAFT RETAINER.

When the crankshaft journals become scored or cut in any manner it will be necessary to remove the crankshaft from the car so that they can be made smooth. This work is generally accomplished by placing the crankshaft in a lathe and holding a lapping tool on the damaged part. However, if a lathe is not available, the work may be done as shown in Fig. 5. The device consists of a strong bolt which passes through and near the edge of the work bench and a small piece of hard wood. With the crankshaft clamped in this manner the lapping tool may be turned by hand around the stationary journal. This method may also be adopted when scraping in connecting rod bearings.

DEMOUNTABLE RIM REPAIR.

When the lugs on the wheel are not kept properly adjusted, depressions are worn in the demountable rim, which will become loose and noisy. A remedy for this condition is shown in Fig. 4. At the points of wear the metal should be filed away to produce a flat surface. Small pieces of brass can be soldered to the rim and then filed to an even surface.

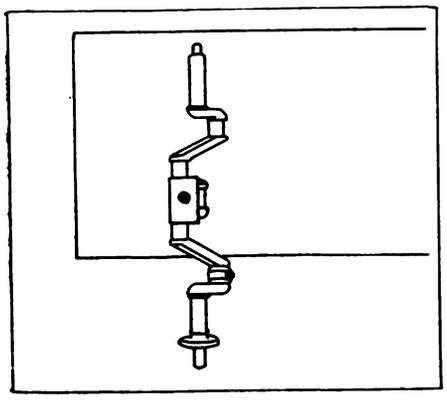

Fig. 5—Crankshaft Retainer, a Suggestion for Holding the Shaft Securely on the Work Bench When Working on Journals.

SOLDERING CAST IRON.

One often sees the assertion published that cast iron cannot be soldered, but the following plan has been adopted with success, providing that the repair is not to be subjected to excessive strains or heat. The part to be soldered is cleaned with a brass scratch brush and then the entire surface is covered with soldering acid. The next step is to sufficiently heat the metal so that it will melt and retain a thin coat of tallow. The part can then be soldered in the usual manner.

PATCHING CEMENT.

A cement for patching rubber boots and which will also unite leather to leather, India rubber, etc., consists of 15 parts rosin, 100 parts finely chopped India rubber and 10 parts shellac. Dissolve the ingredients in carbon disulphide. The vessel in which the preparation is made should be kept tightly sealed and should be taken from time to time. Carbon disulphide is highly volatile and must not be exposed to a naked flame.

REMOVING RUST FROM NICKEL.

Rust may be removed from nickel by smearing the parts with grease and allowing it to remain for several days. If the rust is not bedded too deeply in the metal it can be rubbed off with the grease, a cloth dipped in strong ammonia being utilized for the purpose. If it be very deep, apply a diluted solution of hydrochloric acid, taking care that it does not touch the metal. Wash and polish in the usual manner.

DETERMINING STEEL.

A method of determining self-hardening steel from the ordinary cast steel is to bring the metal into contact with a high speed emery wheel. If the sparks given off are of a bright red color, it is almost positive proof that the material being ground is cast steel. If the color of the sparks, however, is a dull red, the steel is of the self-hardening brand, the sparks of which are much similar to those given off from cast iron.

RAISING THE CAR.

Repair men often place jacks under the frame of the car when it is necessary to remove the rear assembly, a practise which requires blocking of the front wheels. Care must also be taken that the body is not touched, as very slight pressure would cause the car to fall off the jacks. A simpler method of raising and holding the rear of the car steady is illustrated in Fig. 6. This suggestion can only be adopted, however, when there is a chain fall attached to the ceiling of the room. The top of the car is lowered and the tonneau floor

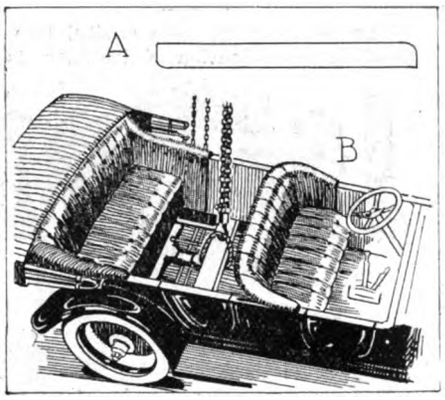

Fig. 6—A Practical Means of Raising the Car When a Chain Fall Is Available.

board removed. Next cut from a plank four inches wide and about 2½ inches deep a length that will tightly wedge into the channel steel frame of the chassis. The board should be rounded at the edges as shown at A, so that it can be driven with a hammer into the frame. A sling can then be placed around the board and then placed in the hook of the chain fall. The advantage of this method is that it is impossible for the car to be pushed over.

PATCHING INNER TUBES.

A garage man who has had much experience in placing cold patches on inner tubes, offers the suggestion that the cause for much failure when making this repair is that the injured section is usually placed on a flat surface. As the tube is circular in shape there is a tendency for the patch to pull off when the tube is inflated. In Fig. 7 is shown the type of stand used by this garage man. It consists of a piece of round wood about four inches in diameter and one foot in length. Nothing is better for this purpose than the thick section of a baseball bat. One side of the wood is flattened and attached to a bracket which is formed as shown. The end of the bracket is secured in a vise and the rounded table is ready for use.

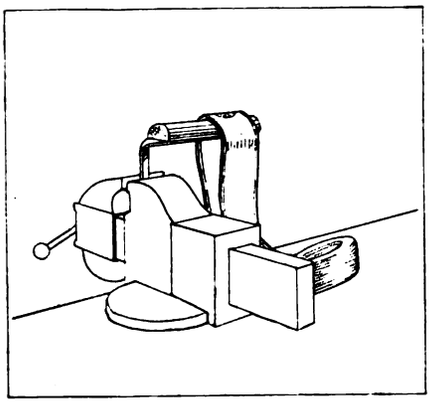

Fig. 7—Patching Inner Tubes, a Practical Device Which Affords Excellent Tube Repairs by Offering a Round Surface.

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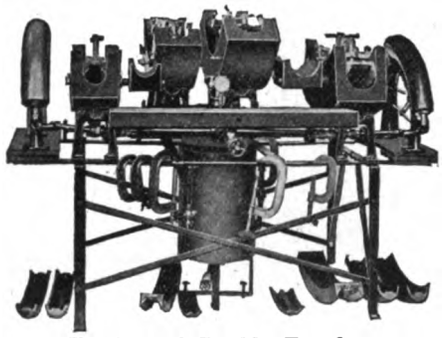
MOTOR CAR ACCESSORIES AND EQUIPMENT.

VANDERPOOL DOUBLE TREADER.

The Vanderpool two cavity, two retreading combination vulcanizer is a



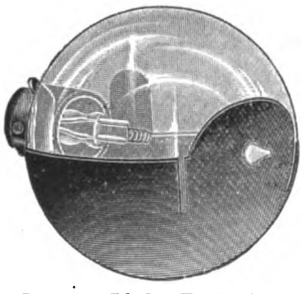
Vanderpool Double Treader.

complete equipment and no repairs are too large or too small for it. It is equipped for vulcanizing any portion of the outer casing, for retreading and for double treading on three to five-inch shoes, including clincher and straight side casings. The outfit includes one 18-inch and one 20-inch cavity for sectional work and two pairs of clincher and straight side bead molds; two retreading molds, one-third circle length, and with cores; one three-foot tube plate and five molds for small tread work, eight inches long, with necessary pads and clamps; five inside vulcanizers with screw draw bar.

Manufactured by the Vanderpool Company, Springfield, O., and 1044 Los Angeles, Cal. Write for prices.

LENNON LIGHT PROTECTOR.

The Lennon light protector is a patented, flexible brass reflector, heavily plated, which throws the beams of light on the road at the approved height from the ground and stops the glare which is



Lennon Light Protector.

prohibited by statute in many states. It is made in two sizes and will fit any headlight. The protectors are light in weight and simple of construction and have no delicate springs or extra parts to become broken. They are attached without removing the bulb from the headlight, the operation being to place the eyelet of the protector over the tip of the bulb and pressing it into position, where it is held firmly. Those rays of light that ordinarily would be thrown outward and upward into the eyes of oncoming motorists and pedestrians are reversed and directly downward.

Distributed by J. H. Faw, Inc., 41 Warren street, New York City. Retail price per pair $1.

JIFFY AUTO CLOTHES.

For all persons having to do with the repair or adjustment of a motor car and its parts a protecting suit is desirable equipment. One of the best outfits of this kind is shown in the accompanying

Jiffy Auto Suit.

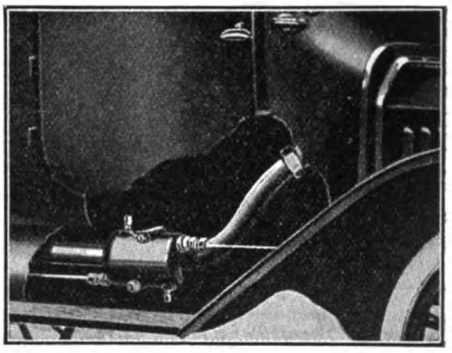
illustration. It is described as the Jiffy Suit and is made of khaki, which is both waterproof and very durable, as well as dust proof. It bears the name Jiffy because it can be put on or taken off in a "jiffy." It is one piece and is provided with pockets for carrying tools and small parts.

Manufactured by the M. & N. Clothes Protector Manufacturing Company, 684 Broadway, New York City. For sale by leading automobile supply houses at a very moderate price.

PERKINS VAPORIZER.

The Perkins vaporizer is a simple device that is clamped to the exhaust pipe and heats the gasoline before it enters the carburetor, resulting in a highly combustible mixture which, the maker declares, absolutely gives eight miles more per gallon of gasoline used. This claim has been proven in actual tests. The vaporizer can be attached easily and quickly, without soldering and without tools. It is designed especially for Ford cars and will be found a quick seller. Dealers are furnished, free, with "One Mile Per Pint" demonstrating equipment and are offered liberal profits and exclusive territory.

Manufactured by the Perkins Appliance Company, Springfield, Mass. Re-



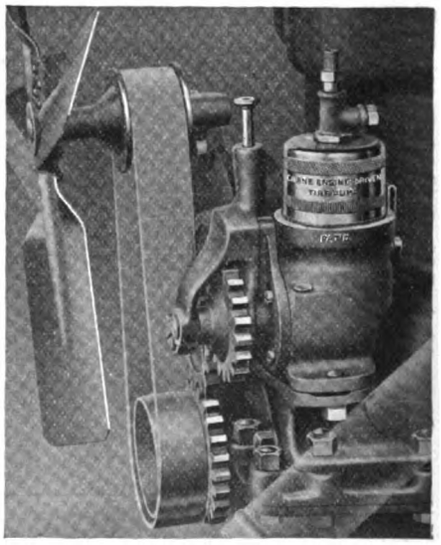
Perkins Vaporizer.

tail price, installed, $5; write for trade discounts, etc.

CRANE TIRE PUMP.

In designing the Crane engine driven tire pump the builders have followed original lines to obtain a device that is as near perfect as possible. To eliminate the objectionable feature of spraying oil into the tire while using the pump a special alloy patented packing ring has been incorporated. This ring, which is one of the outstanding features of the Crane pump, is so arranged between the cylinder and piston that it absolutely insures the delivery of all the air contained in the cylinder into the tire free from oil.

The drive of the pump is by split gear, bored to correct size to fit the shaft on any model of car. Installation is simple and can be done by the car owner in his own garage, attachment be-



Crane Engine Driven Tire Pump.

ing by adjustable brackets that fasten to bolts or studs already on the engine.

Manufactured by the Bay State Pump Company, 275 Congress street, Boston, Mass. Price $8.

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A BOX OF BITS.

A special combination tool set offered by one of the largest manufacturers consists of a full set of 13 Lakeside solid

Montgomery Ward Combination Bit Set.

centre stem augur bits, including double cutter, two spurs; standard double thread screw. The sizes range by sixteenths of an inch from ¼ to 1 inch inclusive. They are shipped in an upright wood box, with hinged cover and well varnished.

Manufactured by the Montgomery Ward & Company, New York and Chicago. Price $3.40 complete. Write for the company's tool book, which is sent free of charge.

MARTIN TIRE COVERS.

Tire manufacturers are impressing upon car owners more than ever before that they should keep the spare tires protected from light, rain, dust, etc. For this reason a majority of motorists are in search of suitable covers. The Martin line consists of tire covers, water buckets, inner tube cases and similar goods. These are made of heavy imitation leather. The tire covers are made in various styles and are designed to fit the different tire mountings.

The Martin automobile bucket will be

Martin Tire Cover.

of special interest to the motoring public. It is made of special dull black, finished water proof duck. When not in use it can be folded flat or rolled up and carried behind or under the seat or in the tool box. The cardinal feature is that the operator can pour water from this bucket into the radiator filler opening without using a funnel.

The Martin line is well worth the investigation of any dealer as the products are of the highest grade and the liberal discounts allow for large profits.

Manufactured by the Martin Manufacturing Company, Lancaster, O. Write for descriptive circulars and discount sheets.

BRUGAN ECONOMY VALVE.

The Brugan economy valve is as its name implies a device designed to economize the quantity of gasoline used in a motor, increase the power and reduce carbonization. It automatically admits air as needed to break up the gasoline particles that have come from the carburetor, resulting in a lean, powerful and free burning mixture. To install it is necessary only to drill a hole in the

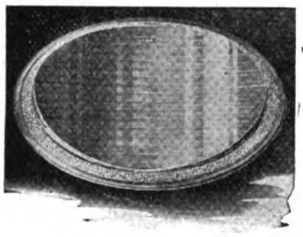
Brugan Economy Valve.

intake manifold near the carburetor, tapping it for a quarter inch standard pipe thread. The valve is shipped adjusted to average conditions, but may be more finely set to suit individual cases. The maker is advertising extensively.

Manufactured by the Brugan Company, Bangor, Me. Retail price, $4; write for complete description and trade prices.

LEGALITE LENS.

Legalite lens is a special non-glare type consisting of a combination of three distinct prisms arranged horizontally and throwing the beam of light downward and across the road and never more than 42 inches above the ground. The maker declares that the lens delivers 26 per cent more light than the ordinary type and without glare. The lens has been endorsed by many state and highway commissions and societies and police departments and was declared by the Massachusetts Automobile Club, the maker asserts, as the best among 26 different headlights tested. Legalite comes in all sizes for every style of lamp and is easily installed. The maker isues a book, free of charge, entitled "Daylight Conditions for Night



Legalite Lens.

Driving," which tells about Legalite.

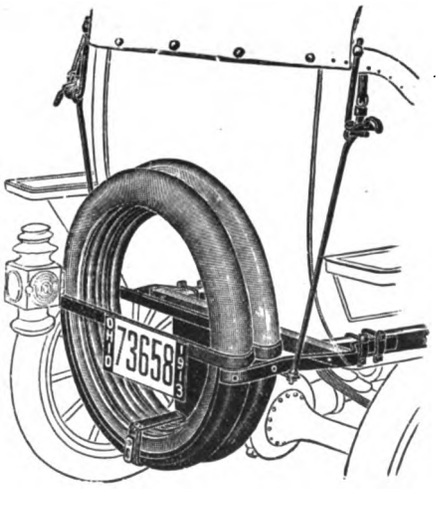
Manufactured by the Legalite Corporation, Dept. 136, 120 Boylston street, Boston, Mass. Write for prices, trade proposition and book.

TIRE HOLDER COMBINATION.

Included in the large variety of New Era automobile specialties is a combination lamp, number plate, tire holder and lock especially designed for the Ford car and given the trade name "Sly Perfect." It is made of pressed steel, black enameled, forming a snug cradle for each tire. The construction also incorporates a thief-proof snap lock.

A deflector plate affords positive protection to the tires against the exhaust heat, smoke and oil. The number plate holder, lamp bracket and lock are a fixed part of the holder.

Either tire can be removed without disturbing the other. The attachment of the holder is said to greatly improve the appearance of the Ford. Installation can be effected by anyone in a few minutes. Complete instructions accompany each holder sold and no drilling or



New Era Tire Carrier.

cutting is necessary.

Manufactured by the New Era Spring & Specialty Company, 877 Woodward avenue, Detroit, Mich. Write for booklet showing complete line of accessories.

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REVOLVING SCREW RACK.

The New Britain revolving screw rack, illustrated herewith, is regularly furnished with 48 compartments, capable of accommodating between 500 and 600 pounds of stock. Each compartment of the two upper shelves will hold about two quarts of bolts, nuts, screws, cotters or other small parts. The compartments of the two lower shelves are double the size of those above. Each compartment is instantly accessible by reason of the pivot base. The revolving top is supported by a ball step bearing and but a touch is needed to bring any desired section into view.

A feature of special interest is that the partitions can be rearranged to suit any special needs, and shelves may be added to or taken from the rack as desired. By the addition of eight extra partitions to either or both of the lower shelves, the number of compartments is increased to 56 and 64 respectively.

Manufactured by the New Britain Machine Company, New Britain, Conn. List price as shown, $38.

Revolving Screw Rack.

GARAGE DOOR HOLDER.

Motorists who store their cars in garages that are fitted with swinging doors, have frequently experienced difficulty, especially in windy weather, in keeping the doors wide open while driving the car into the garage. The Griffin garage door holder is a simple, strong, practical and serviceable article designed to hold open all doors that swing. It is made of wrought steel and is said to be strong enough to hold the heaviest garage door against the strongest winds. Attachment is made high up on the door and entirely out of the way. A chain attaches to the holder in a convenient position and trips the lock so that the door can close in the usual manner. When closed the holder lays in against the door. It is designed to work either right or left hand, as may be required.

Manufactured by the Griffin Manufacturing Company, Erie, Penn. Write for descriptive folder and prices.

Garage Door Holder.

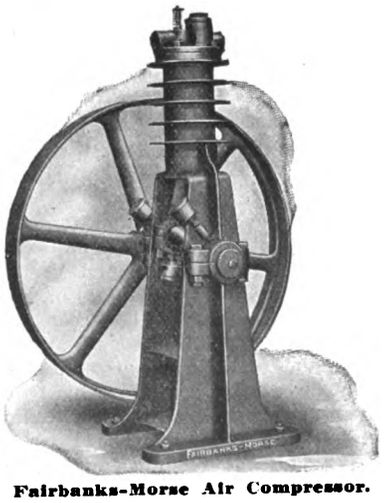
AIR COMPRESSOR.

The Fairbanks-Morse type "C" single-cylinder air compressor is suitable for general intermittent service and is especially adapted for garage use. It is simple, compact, accessible, easily installed and all parts are interchangeable. Belt slipping is prevented by there being a pulley of large diameter, which also has a wide face. The compressor is regularly equipped with a single pulley, but can be supplied with the tight and loose types if desired.

The main casting is heavy and well braced. The crank and pitmans are forged steel and run in babbitted bearings that are adjustable for wear and are lubricated by compression grease cups. Cooling is by the air method, the thin, wide radiating flanges greatly assisting.

The cylinder and piston are ground to size and polished, while the metallic expansion rings, which are not affected by heat, are correctly shaped by a grinding process. The intake valve is drop forged, turned and ground to a perfect seat and the cup shaped discharge valve is of polished steel.

Manufactured by Fairbanks, Morse & Co., Chicago, Ill. Descriptive literature and price furnished on request.



Fairbanks-Morse Air Compressor.

MARTIN WATER BUCKET.

One of the best all-round folding water buckets on the market today, and one that is being consistently advertised in national publications and consequently is in demand by motor car owners, is the Martin bucket, shown in the accompanying illustration. The manufacturer describes the article as being made of heavy and first grade imitation leather, not cheap oil cloth, and consequently far superior as to durability and general service. The bucket is so shaped that water can be poured into the radiator without spilling or splashing.

Manufactured by the Martin Manufacturing Company, Lancaster, O. Write for prices and trade discounts.

PULLEY-GRIP.

Because of the location of the fan belt of an automobile it is subjected to severe tests and strains. Hot air destroys the grain in the leather, thus causing the fan pulley to spin inside of it and burn the leather. This condition, of course, results in decreased fan speed and impairs the cooling efficiency of the motor. Tightening the fan belt at frequent intervals to overcome these troubles wears out the bearings and it is expensive to frequently replace the belt.

Martin Folding Water Bucket.

A satisfactory method to eliminate all of these troubles is to apply Pulley-Grip to the fan and motor pulleys. This is a chemical preparation which possesses the peculiar quality of creating a virtually ideal adhesion between pulleys and belts, making it possible to relieve the strain of tight belts and avoid worn out bearings. Some of the advantages claimed for it are the prevention of loose and broken fan belts, and worn out bearings; avoidance of frictional electricity and its incident dangers; removal of oil and grease from the fan belt, keeping it in excellent condition at all times.

Manufactured by the Pulley-Grip Company, 405 Broadway, Milwaukee, Wis. List price, 50 cents per can.

NEW ERA SHOCK ABSORBER.

A recent announcement of new development in shock absorbers is the New Era twin elliptic type, which combines the new radius link feature that has been pronounced the greatest improvement

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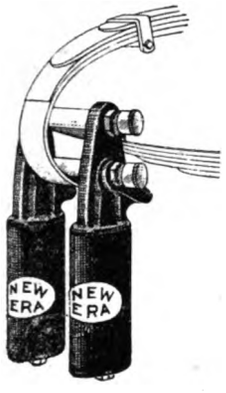
for freedom of action ever used on elliptic absorbers.

The New Era absorbers, which are made for both Ford and other cars, have a rigid anchorage and yet allow freedom



New Era Shock Absorber.

of operation. The maker declares there is no wear of plunger or bearing, that no caps can be lost, and that they afford an extremely smooth cushion effect while in service on the roughest of roads.

The method of attachment to the spring assembly is shown in the accompanying illustration. They are easily mounted and do not in any way detract from the appearance of the car, because they are handsomely and durably finished. The standard devices are made in four sizes. No. 1 set being for cars up to 2300 pounds in weight, No. 2 from 2300 to 3000, No. 3 from 3000 to 3800, and No. 4 from 3800 and up.

Manufactured by the New Era Spring and Specialty Company, Detroit, Mich. List prices for each different sized set, which consists of four absorbers: No. 1, $12; No. 2, $12.50; No. 3, $13.50; No. 4, $15.

PUFFER-HUBBARD LUNCH TABLE.

The Puffer-Hubbard outing lunch table affords a neat, complete table two feet wide and four feet long when unfolded, and a compact package measuring 1½x10x24 inches when not in use. It is usable even on rough ground, the legs of the table being sunk into the ground to obtain the proper level. The metal parts are of smooth steel and rust proofed in white finish, while the top is of three-ply birch veneer and nicely finished.

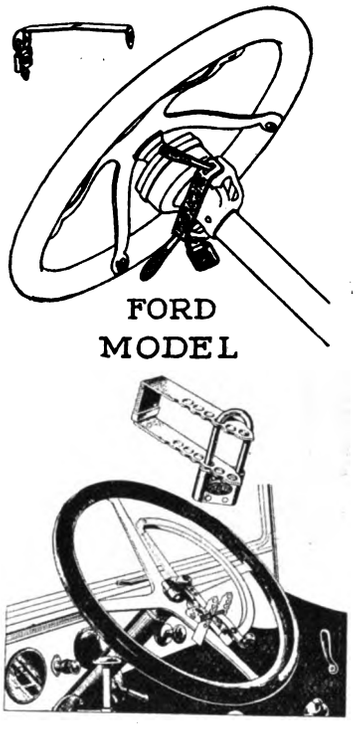
Manufactured by the Puffer-Hubbard Manufacturing Company, Minneapolis, Minn. Retail price, $5. Write for trade proposition.

Puffer-Hubbard Lunch Table.

AUTO LOCKING DEVICE.

Among the automobile locks on the market, one which should appeal to every motorist, both because of design, construction and price, is Sturr's auto locking device, two types of which are illustrated herewith. The one shown in the upper sketch is designed especially for Ford cars. It fits tightly over the gas and spark levers, making it impossible to operate the machine until removed.

The lower illustration shows the locking device, which is adjustable to all automobiles except the Ford. As shown, it fits tightly over the gas and spark throttle levers and a rib of the steering



Auto Locking Device.

wheel, thus holding the latter rigid and making operation of the car impossible. Both devices include a lock with two keys.

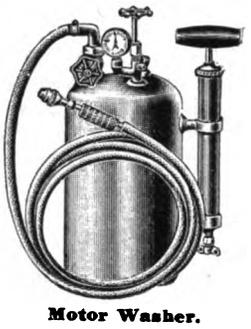
Manufactured by the Sturr Auto Lock Company, 9 View place, Cincinnati, O. List price of either locking device, including lock with two keys, $1.

TURNER MOTOR WASHERS.

Frequently the outward appearance of a motor is neglected because of the time and labor involved in the cleaning operation. This work can be made simple by the use of the Turner motor washer.

The No. MW-1 is a small hand machine with a drawn brass tank, the bottom being brazed in place and fitted with a non-leaking filler plug. The handle incorporates an automatic pump which forces the liquid through an adjustable nozzle.

No. MW-2 and MW-3 have tanks of drawn steel, equipped with a pressure gauge registering up to 100 pounds. The tanks have large hand pumps and also connections, so that they may be attached to a pressure tank or to a power driven pump. Ten feet of cloth insertion rubber hose and adjustable nozzle



Motor Washer.

are fitted to these washers. Kerosene may be used as the cleansing agent if desired.

After obtaining the necessary pressure in the tank, by merely turning the nozzle either a finely divided spray or an intense needle stream can be produced. The liquid instantly cuts and washes off all grease and dirt from the motor and other working mechanism of the car. Inaccessible parts can be reached with this stream and thoroughly cleaned. A feature of the washer is that the tank may be pumped full of air for drying and for blowing dust and other foreign matter out of the car.

Manufactured by the Turner Brass Works, Sycamore, Ill. List price of quart size, $4; two gallon size, $18, and five gallon size, $21.

COMFO-LUX BACK REST.

All motorists will be interested in the Comfo-Lux back rest, which is a practical device intended to relieve the fatigue of long distance driving. It is not only intended for the driver, but for the other occupants of the car, and can be easily installed or removed, it being in the nature of a supplementary cushion. It is of concave form, 4½ inches thick at the bottom and tapering to a thickness of one-half inch at the top. It is nicely upholstered in fabrikoid and is dust and weather proof.

Manufactured by Rudolph Claus, Ottawa, Ill. Retail price, $3. Write for trade discounts and literature.

Comfo-Lux Back Rest.

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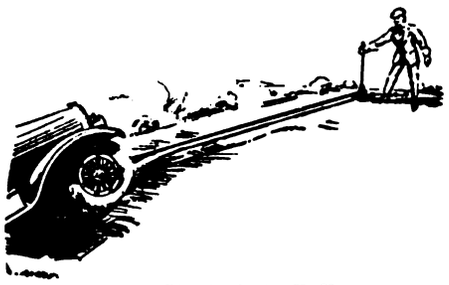
NEVER-STUCK AUTO PULLER.

An all round device for both car owners and garage men is the Never-Stuck Auto Puller, which can be used for pull-



Never-Stuck Auto Puller.

ing cars out of holes or ruts and also for hoisting or hauling heavy parts in the garage. Its principle of operation is clearly shown in the accompanying illustration. The maker declares it will pull a car out of any hole or rut and that it is extremely rugged and easy of operation.

Distributed by the Montgomery Ward & Company, New York and Chicago. List price, $6.50. Write for descriptive literature.

WONDER-MIST.

Wonder-Mist is a combined dirt solvent and varnish renewer, not an ordinary polish, which is sprayed on the exterior of an automobile to keep it clean and shining like new. It acts as a varnish "food," conserving it and adding to its longevity of life, and is applied by means of a sprayer which is furnished free and covers 10 square feet with each spoonful of liquid. No water or soap is required and no rubbing is necessary. Wonder-Mist is equally effective for body, hood, fenders, leather upholstery, wind shield and all other exposed parts and is guaranteed to be absolutely harmless. A large field for sales of Wonder-Mist exists, and thousands of car owners are now using it, because of its effectiveness and its moderate price. The maker supplies sales helps, window displays, etc., to its dealers.

Manufactured by the Wonder-Mist Company, 14 Federal street, Boston, Mass. Retail price, one gallon, $3; half gallon, $2; one quart, $1.25. Sprayer with each outfit.

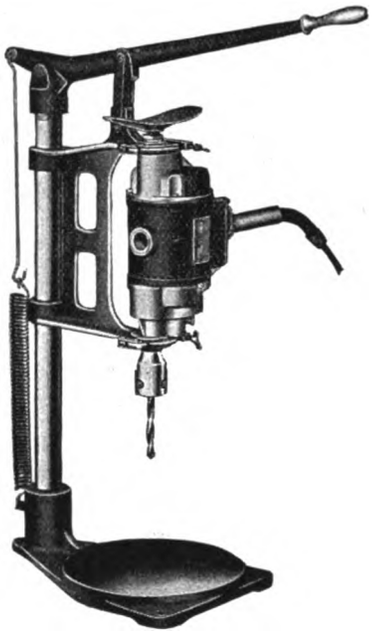
LITTLE WONDER VAPORIZING VALVE.

The Little Wonder vaporizing valve is described by the manufacturer as a device designed to reduce consumption of gasoline and simultaneously increases the power of the engine. The claims have been substantiated by A. A. A. tests, they showing 37.5 gasoline saved on a four cylinder motor, 41.8 on a six-cylinder and 42.2 on an eight. Increase in power ranged from 18 to 34 per cent. At this time when motorists are giving more attention than ever to economizing fuel there is great opportunity for sales of the Little Wonder vaporizing valve, especially in view of the fact that the maker is conducting a national advertising campaign.

Manufactured by the Burgess Specialty Company, 98 Pond street, Providence, R. I. Retail price $4; write for trade proposition.

ELECTRIC PORTABLE TOOLS.

The Duntley electric sensitive drilling stand is valuable equipment for the garage. It is rugged and substantially made throughout and is intended for accurate drilling. The weight of the drill is counterbalanced by means of a spring, and a key, or feather, in the movable bracket keeps the drill in vertical alignment and insures the drilling of straight holes. The larger sizes are provided with tee slots in the base plate so that the work may be bolted down if desired.



Duntley Electric Portable Stand.

It is built in five sizes to take the standard Duntley side spindle drills of either the universal or direct current types, ranging in capacity from 3-16 to ½ inch in metal. The drill itself is held in place by two clamping straps, shown in the accompanying illustration, secured by screws and thumb nuts, allowing it to be removed in a few seconds and used as a portable drill.

Manufactured by the Chicago Pneumatic Tool Company, Fisher building, Chicago, Ill. Write for prices and the company's bulletin E-31, which fully describes the drilling stand.

SPRING COVER AND LUBRICATOR.

The Woodworth spring cover and lubricator is a felt lined leather covering which is laced over the springs, entirely covering them. Before being put on the felt lining is saturated with oil, it holding sufficient to lubricate the springs for at least 10,000 miles of running. The leather is treated by a special process which makes it oil and water proof. The cover makes a very neat appearance on any car, it being laced on smoothly and tightly over the springs. It prevents dust and grit from lodging in the springs, which insures longevity of service.

Manufactured by the Leather Tire Goods Company, Niagara Falls, N. Y. Full details and prices supplied by the maker upon request.

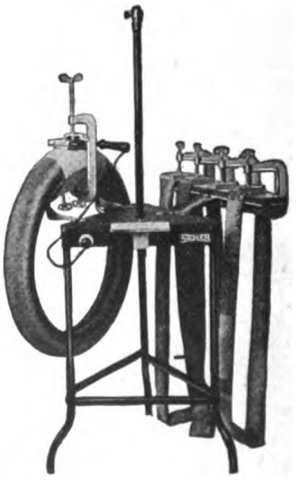
SHOP VULCANIZER.

The shop vulcanizer shown herewith is the new Shaler type A-C-E. It is designed to meet all the requirements of the garage or repair shop where a maximum daily output of 200 tubes and 12 casings is desired. On the other hand, this equipment is exceptionally useful for the small shop that desires to afford complete service even though repairs are infrequent, as the vulcanizing temperature is produced as quickly as a tube can be prepared.

Repairs can be made on eight tubes and a blown out casing at the same time. The latter work is accomplished by the approved wrapped tread method, which has been an exclusive Shaler feature for the past 10 years. This is an efficient method because of its simplicity, economy of repair material and the fact that all sizes of tires are mended without molds or extra forms.

This plant is patterned after the well known Shaler steam vulcanizer, but differs in that the heat is obtained from city lighting current by attaching to any lamp socket. As in all Shaler vulcanizers, the temperature is automatically controlled by thermostats, which prevent the use of too high or low a heat. A meritorious feature of electric heat is that it is absolutely safe and does not in any manner conflict with garage regulations.

The tube plate, inside casing form, outside casing form and auxiliary tube vulcanizer may, if desired, be purchased separately and be attached to any work bench for use in their own distinct kinds of work. The tubular stand, with all electrical wiring complete, is also offered to repairmen who are at present using Shaler equipment of the work bench type.



Shaler Shop Vulcanizer, A-C-E.

Manufactured by the C. A. Shaler Company, 250 Fourth avenue, Waupun, Wis., maker of a complete line of steam, electric and gasoline heated vulcanizers. List price of the A-C-E shop type shown is $60.

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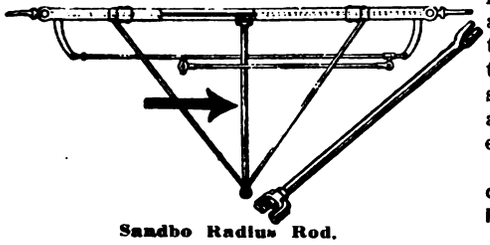
KORINE CARBON REMOVER.

Korine carbon remover is a fluid, made up after a secret formula, which is designed to clean a motor of all carbon encrustations more quickly, safely and satisfactorily than can be done by ordinary methods. It is intended to take the place of costly carbon burning outfits and has been in use for more than four years in some of the largest garages in the country. The maker guarantees that it will do all that is claimed for it and that the fluid is non-injurious to motor parts and that it is absolutely fireproof. It is put up in quart and half gallon quantities for car owners and in larger quantities for garage use.

Manufactured by the Korine Carbon Remover Company, Room 317, 136 Federal street, Boston, Mass. Retail price, quart, $1; half gallon, $1.75; gallon, $3.00. Write for trade discount and agency proposition.

SANDBO RADIUS ROD.

The accompanying illustration shows the Sandbo radius rod, which makes for ease in steering a Ford car. This device can be attached in five minutes. It has no springs and there is nothing about its construction to get out of order. It is guaranteed for the life of the car.



Sandbo Radius Rod.

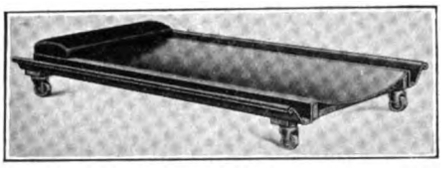
Locking the wheels is prevented by the use of the Sandbo radius rod and this attachment also prevents turning in at the axles. It keeps the front axle from tilting backward and with the proper adjustments it takes up all looseness and rattle.

The Sandbo makes the entire front end of a Ford steer firmly and steadily. It fits in the radius rod crotch to the middle of the front axle and can be adjusted to suit the driver. The Sandbo is covered by a liberal money-back guarantee.

Manufactured by the Sandbo Starter Company, Rock Island, Ill. List price, $1. Dealers should write for maker's selling proposition and discount sheet.

MECCO AUTO CREEPER.

When work must be done from underneath the machine, nothing adds greater to the comfort of the work man than a good creeper. For this reason they are a necessity in every private, as well as public garage. One of the best of these is the Mecco auto creeper, illustrated herewith. This device will enable inspection or repair of the bottom of the car without soiling clothing or the necessity of lying on a cold, uncomfortable floor. Statement is made that the smooth, steel, curved body and soft head rest make the creeper almost as comfortable as a bed. The pockets on each side are convenient receptacles for tools, nuts, bolts or other small parts, keeping them within reach when needed.



Mecco Auto Creeper.

The Mecco is 36 inches in length and 20 inches in width. It is made of sheet steel formed over a wood frame work and mounted on four casters. The soft head rest is part of the regular equipment.

Manufactured by the Moeschl-Edwards Corrugating Company, Inc., Covington, Ky. List price, $2.

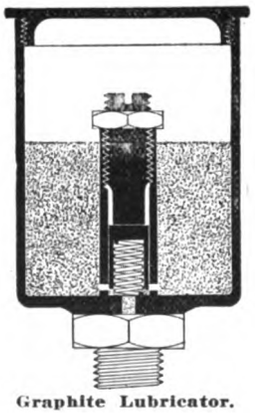
GRAPHITE LUBRICATOR.

The graphite lubricator is a small device which automatically feeds dry graphite to the motor cylinders, in this way allowing them to become coated with a thin film of this lubricant. The lubricator is in the form of a container which is screwed into the intake manifold. Motor suction draws in a small amount of graphite through a valve in the device. The maker declares that the device makes for better compression, increase of power, saving in fuel and oil and that it does away with the evils of carbonization.

Manufactured by the Graphite Lubricator Company, 326 Diamond street, Pittsburg, Penn. Price $6.

O-SO-EZY POLISH SALESMAN.

A greatly increased demand for automobile body polish is being experienced by dealers and garage men in all parts of the country, a condition which is generally credited to the educational efforts of the car manufacturers, many of whom are including O-So-Ezy polish in their standard equipment of cars. The makers of this polish are supplying free of charge to dealers who order the standard



Graphite Lubricator.

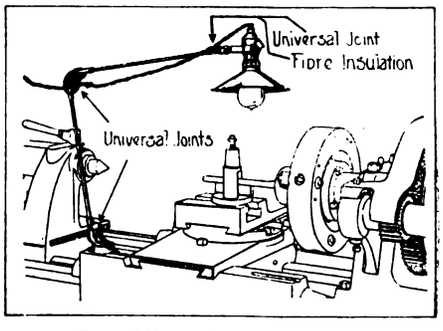
stock of O-So-Ezy Cedar Oil Polish, a handsome mahogany finished display stand of the "Silent Salesman" type. In addition to this sales help the company is conducting a national advertising campaign. The stock contains a wide variety of sizes of containers and consists of the same brand of polish furnished as standard equipment on the following cars: Abbott-Detroit, Briscoe, Buick, Chalmers, Chevrolet, Detroit-Electric, Detroiter, Empire, Grant, H. A. Lozier, Haynes, Hupmobile, Inter-State, Jeffery, King, Maxwell, Oakland, Oldsmobile, Overland, Paige-Detroit, Reo, Saxon, Scripps-Booth, Stutz and Winton.

Manufactured by the O-So-Ezy Products Company, 264 Jefferson avenue, Detroit, Mich. Prices and complete descriptive matter supplied by the company upon request.

SEARCHLIGHT LAMP BRACKET.

Very useful repair shop equipment is the Searchlight lamp bracket which furnishes a ready means by which a light can be instantly moved to any desired position, vertically or horizontally, by only a slight push. If desired, it can be quickly removed from the spring clamp and as easily replaced.

The universal joint in the Searchlight bracket consists of friction discs so arranged as to give both horizontal and vertical movements. Between each pair of discs is a friction washer, and the amount



Searchlight Lamp Bracket.

of friction is regulated by screws and lock nuts which hold it uniform at any desired tension. The arms are of solid steel and the discs are of malleable iron machined to a perfect bearing on the friction washers between.

The Searchlight brackets are made in a blued finish by a special process, making them practically rust proof and attractive in appearance.

Manufactured by the McCrosky Reamer Company, Meadville, Penn. The price is $1.50, which is subject to a quantity discount. Write the maker for circular matter.

VULCAN SPRINGS.

The maker of Vulcan springs constantly carries in stock types and sizes suitable for 90 per cent. of all models of American made cars, and to those dealers who carry the line offers an attractive display rack on which to carry the springs in full sight of patrons of the garage or accessory store.

Manufactured by the Jenkins Vulcan Spring Company, 1402 Chestnut street, St. Louis, Mo. Write for the company's liberal dealer offer and descriptive literature.

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NEWLY INCORPORATED CONCERNS

Monthly Record of New Business Houses that Have Been Chartered in Various States.

This department is an important summary of the concerns which have received charters in the various states to conduct businesses that have direct relation with the motor vehicle industry. In each instance the amount of capitalization is given, when such information is available, the names of the individual incorporators and the nature of the business to be conducted.

Dealers In Automobiles and Motor Trucks.

San Francisco, Cal.; Magnetic Motor Car Company; $75,000; W. D. Vance.

Windham, Conn.; Jones Auto Company; $25,000; to deal in automobiles; Merrill H. Jones, Anna Kegut, Angelina Jones.

Dover, Del.; Olympian Motors Company; $1,000,000; to buy and sell and deal in and with motor vehicles and parts for same; Glen C. Bull, C. E. Calender, Frederick Arnd.

Washington, D. C.; The Haynes Motor Company; $10,000; to do a general automobile business; Daniel B. Gish, Herschel R. Gish, Genevieve K. Gish.

Jacksonville, Fla.; Hutto Motor Sales Company; $10,000; to deal in all kinds of motor vehicles; M. C. Hutto, A. M. Hutto, M. K. Hutto.

Chicago, Ill.; Classic Motor Car Corporation; $1000; John C. Alten, George A. Mason, J. Harrison Dixon.

Chicago, Ill.; Comet Automobile Company; $1,000,000; to deal in machines and engines.

Evansville, Ind.; The Calumet Auto Company; $20,000; Herman F. Platuberg, president.

Indianapolis, Ind.; Mitchell Auto Company, Inc.; $5000; to deal in automobiles and accessories; W. M. Wilkes, H. T. Wilkes, C. C. Himes.

Bangor, Me.; The Brugan Company; $40,000; to deal in automobiles and accessories; Alexander S. Bruce, John J. Logan, Helen Bruce.

North Berwick, Me.; Big Six Auto Company; $10,000; to conduct a general automobile business; president, Ray E. Littlefield; treasurer, Guy S. Littlefield; clerk, Iola B. Littlefield; directors, Roy E. Littlefield, Guy S. Littlefield and Ida E. West.

Portland, Me.; Detroit Weather Proof Body Company; $750,000; to conduct an automobile business; president, Albert F. Jones; treasurer, T. L. Crotean; clerk, James E. Manter.

Boston, Mass.; Non Skid Company; $200,000; to deal in motor vehicles; Robert M. Clark, Albert H. Harrington, E. Clifford Potter.

Springfield, Mass.; Bunker Bancroft Company; $25,000; to deal in automobiles.

Baltimore, Md.; The Maryland Motor Car Company; $25,000; to deal in motor vehicles; William J. Sanahan.

St. Louis, Mo.; Republic Motor Truck Company; $20,000; W. L. Murphy, B. W. Hilgard, L. E. Fischer.

Springfield, Mo.; The Central Motor Car Sales Company; $10,000; to deal in cars and accessories and to operate a garage; H. F. Fellows, H. B. McDaniel, F. J. Curran, S. E. Trimble, W. J. McDaniel, M. A. Rathbone.

Asbury Park, N. J.; Lenox Garage and Auto Company; $2000; to deal in motor cars and to conduct a hacking business; John A. Reid, William M. Reid, Egbert Reid.

Hackensack, N. J.; Acker & Lyle, Inc.; $125,000; to manufacture and deal in automobiles; Franklin Acker, Tredwell K. Lyle, Mary C. Lyle, A. W. Acker.

Jersey City, N. J.; Cole & Dixon, Inc.; $20,000; to manufacture and deal in automobiles and accessories; F. G. Cole, Jr., Jonathan Dixon, Warren Dixon.

Albany, N. Y.; Beardsley & Co., Inc.; $100,000; to deal in autos, ammunition, mechanical contrivances, hardware, drugs and chemicals; R. A. Oakley.

Brooklyn, N. Y.; S. H. W. Motor Car Company, Inc.; $20,000; to deal in autos, engines and machinery; R. A. Hill, F. G. Wilcox, L. C. Smith.

Fultonville, N. Y.; The Fultonville Auto Company; $1200; Rufus Richtmyer, W. Leland, Van Epps, Arthur Cranker.

New York, N. Y.; Bates & Ritzel, Inc.; $5000; to do a motor truck business; Frederick H. Bates, Elizabeth F. Ritzel, Theresa Bates.

New York, N. Y.; Chicago Motor Car Company; $55,000; to deal in auto trucks; E. Bluthardt, O. C. Heffinger, M. J. Budlong.

New York, N. Y.; Dreyfus Brothers, Inc.; $10,000; to deal in autos, supplies; A. C. & L. Dreyfus.

New York, N. Y.; North American Rubber Company; $250,000; to manufacture automobiles, tubes and inner casings.

Reno, Nev.; Rees Distillate System, Inc.; $100,000; to conduct a general auto accessory business; Abraham S. Martin.

Dover, O.; The Tuscarawas County Automobile and Aeroplane Company; $3000; to deal in automobiles; R. C. Shaw, R. E. Herzig, F. D. Johns, L. H. Scott, W. H. Scheu.

Toledo, O.; The Wolverine Automobile Company; $175,000; Albert H. Collins, Eli W. K. Burg, Benjamin T. Batsch, Harry E. King, W. A. Searles.

Dunmore, Penn.; Perpetual Spark Plug Company; $100,000; to deal in automobile accessories.

Eskdale, Penn.; Kanawha Service Company; $5000; to deal in automobiles; G. C. Morgan, Jr., J. J. Murray, C. H. Abbot, W. Baughman, J. S. Tamplin, P. J. Dunn.

Scranton, Penn.; Maccar Sales Corporation; $20,000; to deal in auto trucks.

Greenville, S. C.; The Highland Automobile Company; $10,000; O. P. Mills.

Memphis, Tenn.; The Standard Automobile Company; $5000; M. B. Norman, E. A. Utz, P. K. Norman, T. F. Turley.

Waco, Tex.; The Cruger Company; $15,000; to purchase, buy and sell automobiles and supplies; C. R. R. Battaile, Jr., H. T. Cruger, A. H. Bell.

Richmond, Va.; Smith & Hicks, Inc.; $15,000; to operate automobiles for hire; C. M. Smith, president; Mattie Biggers, secretary and treasurer.

Sauk City, Wis.; Hillpoint Automobile and Milling Company; $8000; M. T. Drea, Frank Krueger, Henry W. Kruse, Albert Kruse.

Newly Organized Manufacturers of Cars.

Wilmington, Del.; City Rubber Corporation; $55,000; to manufacture automobiles, tires and tubes; George G. Steigler, N. T. Parsons, E. E. Wright.

Indianapolis, Ind.; Wilbur Johnson Company; $10,000; to manufacture and deal in motor cars, parts and accessories; A. R. Baxter, W. C. Johnson, C. R. Fant.

Detroit, Mich.; Evapco Manufacturing Company; $30,000; Robert Wachman, Luther B. Watson, Sid A. Erwin.

Newark, N. J.; Brick Church Auto and Taxi Company; $10,000; to manufacture and deal in motors, engines and machinery; James A. Knowles, Joseph G. Browne, Robert N. Shoemaker.

New York, N. Y.; Metropolitan Motors, Inc.; $1,000,000; to manufacture, sell and deal in motor vehicles of all kinds; William O'Keefe, George G. Steigler, E. E. Wright.

New York, N. Y.; Pan-American Motors Corporation; $1,000,000; to manufacture motor cars, automobiles and aeroplanes; Norman B. Coffin, Clement M. Enger, C. L. Rimlinger.

New York, N. Y.; The Saxon Motor Car Corporation; $6,000,000.

Columbus, O.; Vim Motor Truck Sales Company; $10,000; W. K. Williams.

Pittsburg, Penn.; American Automobilists' Association; $30,000; to manufacture, sell and deal in and with all kinds of automobile supplies and to furnish legal aid for the protection of automobilists; William M. Enright, A. K. Stoughton, C. L. Brinton.

Darlington, S. C.; The Darlington Oakland Motor Car Company; $2000; K. M. James, secretary.

Spartanburg, S. C.; Overland Piedmont Company; $25,000; A. B. Calvert, Ansel Calvert, John B. Cannon.

Parts and Fittings Makers Incorporated.

San Francisco, Cal.; McCoy Motor Supply Company; $100,000; to wholesale accessories; H. D. McCoy, A. E. McCoy, E. B. King, W. H. Reid, J. M. McDonald.

Wilmington, Del.; A. C Axle Corporation; $100,000; to deal in axles and other mechanisms for motor driven vehicles.

Wilmington, Del.; The Hydro Acetylene Carburetor Company; $1,000,000; to manufacture carburetors; Clement M. Enger.

Chicago, Ill.; Opmet Automobile Company; $1,000,000; to manufacture all kinds of motors; D. Kramer.

Baltimore, Md.; Autogenous Welding and Equipment Company; $50,000; to deal in automobile parts; H. T. W. Heimiller.

Amesbury, Mass.; Clark Body Company; $25,000; George E. Hodge, Thomas Clark, James R. Graves; to deal in automobiles.

Ceylon, Minn.; The Ceylon Motor Company; $25,000; president, William Drummond; secretary, H. A. Saggan; C. E. Champine.

East Orange, N. J.; Wagner-Hoyt Electric Company; $1,000,000; to manufacture electric motors.

Brooklyn, N. Y.; Sphinx Fuel Devices Company; $50,000; to manufacture devices for automobile engines; T. Elliott Hodgskin, Conrad S. Keyes, George A. Wingate.

Manhattan, N. Y.; Hudson Auto Body Corporation; $500,000; to manufacture auto bodies and repair; E. E. Harvey, F. Gurney, M. Civic.

New Rochelle, N. Y.; T. V. T. Motors Corporation; $5000; to engage in motors; W. R. Very.

New York, N. Y.; Auto Gear Company, Inc.; $10,000; E. P. Horton, A. J. and W. M. Cronk.

New York, N. Y.; Humphreys Sales Corporation; $100,000; to manufacture devices for automobiles; Schuyler M. Meyer, S'dney P. Henshaw, Arthur D. Clark.

Poughkeepsie, N. Y.; Poughkeepsie Storage Battery Company, Inc.; $12,000; to manufacture storage batteries and other electrical appliances; John H. Dingman, Frederick Wright, Wilson Dingman.

Columbus, O.; C. A. S. Products Company; $100,000; to handle automobile parts; Charles D. Cutting, Charles S. M. Krumm, J. W. Graham, A. W. Tyler, Dorothy Loechler.

Cleveland, O.; The Kerosene Carburetor Company; $150,000; to manufacture carburetors; M. D. Faunce, W. W. Myers, H. Federman, Walter H. Wendroff, Florence Sturtevant.

Findlay, O.; Varley Manufacturing Company; $20,000; to manufacture parts; Edwin H. Crofoot, Fred Oswald, Cornelius O. Crofoot, Frank O. Paine, Fred B. Lover.

Wilkes Barre, Penn.; Perona-Loc Manufacturing Company; $10,000; to manufacture patches for autos; E. A. Conroy.

Providence, R. I.; Atlas Machinery Company; $30,000; V. F. Kinne, C. A. Cunningham.

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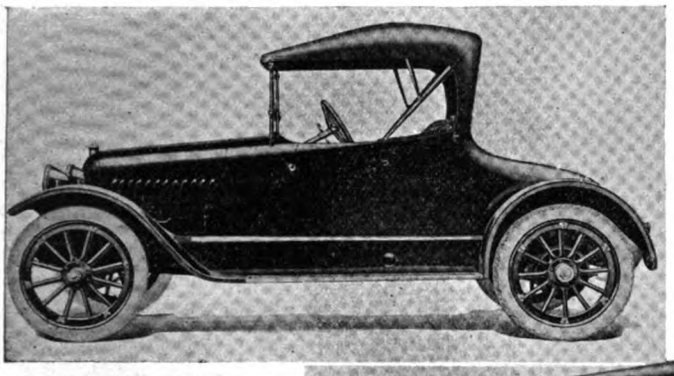
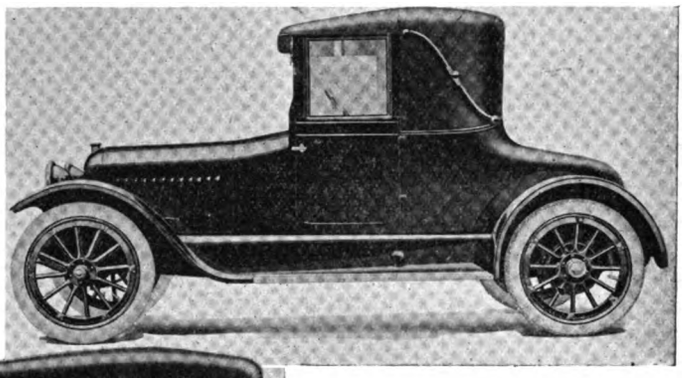
Grant Offers Refined Six for 1917.



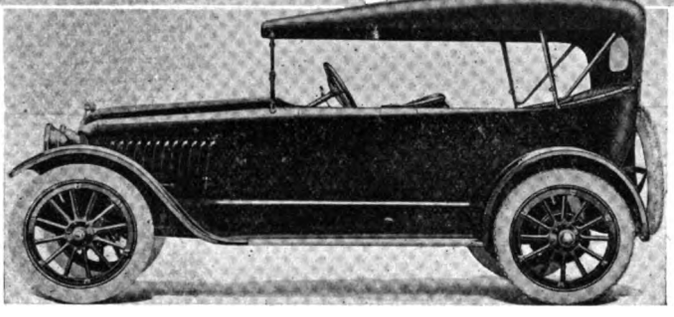
The Grant Roadster, $825.

Motor, Six-Cylinder Block.
Bore and Stroke, 3 by 4¼.
Horsepower (S.A.E.), 21.6.
Carburetor, Stromberg.
Lubrication, Circulating Pump.
Clutch, Cone.
Gearset, Three Selective.
Control, Centre.



The Grant Cabriolet at $1050.

Drive, Left.
Cooling, Thermo-Syphon.
Ignition, Remy.
Starting and Lighting, Wagner.
Rear Axle, Full Floating.
Tire Sizes, 32 by 3½.
Wheelbase, 112 Inches.
Rear Springs, Cantilever.



Five-Passenger Touring Car, Manufactured by the Grant Motor Car Corporation—Complete Technical Description in The Automobile Journal, June 25, 1916.

Providence, R. I.; The General Machine Company; $3000; to engage in a general machinery and automobile business; Eric L. Anderson, Harry M. Burt, Setrak Avak.

Alexandria, Va.; O. K. E. Company; $600,000; to manufacture wire wheels, motor vehicles; Victor Lee Emerson.

Wausau, Wis.; Schubring Motor Company; $25,000; Joshua Wild, William Meier, Paul Heling.

Garages and Repair Shops Newly Chartered.

Bloomington, Ill.; Lexington Garage Company; $15,000; J. W. Ashabrand, H. E. Payne, Carrie Ashebrand, Elmo Franklin, Ida D. Adams, C. L. Ashebrand.

Indianapolis, Ind.; Copple Lilly Company; $2000; automobile repair work; E. N. Copple, Cora Copple, Gustavus Lilly.

Ligonier, Ind.; Lincoln Highway Garage Company; $20,000; James W. Smith, Frank P. Wood, Samuel J. Williams.

Clarinda, Ia.; Waubonsie Garage; $10,000; F. L. Bunch.

Maysville, Ky.; Day and Night Garage Company; $4000; S. M. King.

Eastport, Me.; Brown Garage Company; $10,000; to operate automobile garages; president, Jessie E. Brown; treasurer, Oscar H. Brown; clerk, Esther H. Bowden.

Port Huron, Mich.; Petit Garage Company; $3000.

St. Louis, Mo.; The Mississippi Valley Motor Company; $25,000; F. W. A. Vesper, E. A. Hatfield, Fred Campbell.

Brooklyn, N. Y.; Ideal Auto Repair and Renting Corporation; $500; Anthony Schuhose, Charles Deshau, Fred Schuhose.

Brooklyn, N. Y.; Oakcrest Garage, Inc.; $1000; John F. Ebeling, Peter Lindblom, Karl W. Ebeling.

Brooklyn, N. Y.; Ridge Garage, Inc.; $2000; John L. Bennett, Catherine Bennett, John J. Cunnion.

Haverstraw, N. Y.; Taylor's Garage; $2000; Fred W. Taylor, Fannie Taylor.

New York, N. Y.; Jerome Garage Corporation; $1000; Jerome Mayer, Jacob Abrams, Harry Abrams.

New York, N. Y.; Linwood Garage, Inc.; $5000; Abraham Seff, Thomas Angrom, Morris Neimark.

New York, N. Y.; The Terrace Garage, Inc.; $12,000; to conduct a garage; L. Levin.

New York, N. Y.; Walter J. Burke Garage Company, Inc.; $4000; Walter J. Burke, Edward Furlong, Michael Quinn.

Ogdensburg, N. Y.; Maple City Garage, Inc.; $10,000; Frank J. McCormick, Percy W. Dawley, George H. Charters.

Schenectady, N. Y.; Indian Garage Company, Inc.; $12,000; Walter J. Fitzpatrick, Paul J. Ostringer, William H. Noolan.

Spring Lake, N. Y.; Joseph T. Smith Livery Company; $2500; to conduct a garage and make auto repairs; Joseph T. Smith, Emma W. Newbitt, Emma W. Smith.

Tompkinsville, N. Y.; John D. Killian Auto Company, Inc.; $40,000; to conduct a garage and to deal in motor vehicles; A. E. and A. A. Killian.

Troy, N. Y.; Ryan & Leo Garage, Inc.; $2200; Philip T. Ryan, Margaret Ryan, James Leo.

White Plains, N. Y.; W. P. Auto Sales Company, Inc.; $2500; Walter F. Wheeler, William B. Wheeler, Grace Kavanagh.

Butler, Penn.; The McIntry Auto Garage, Inc.; $5000; to manufacture, repair and sell automobiles and to conduct a garage and service station; C. E. McIntry, Roy M. McIntry, T. Q. Kirkpatrick.

Watertown, S. D.; The Overland Garage; $50,000; W. K. Van Brunt, Ray Van Brunt, W. E. Stevens.

Milwaukee, Wis.; The Belleview Garage Company; $50,000; to operate a garage, repair shop and agency; Richard F. Mokros, Carl Lueders, Sr., E. D. Mokros.

Accessories, Equipment and Supplies.

New Haven, Conn.; The Auto Supply Company; $2000; president and treasurer, Max Mattines; secretary, Warren T. Clifford; Walter H. Goodrich.

Wilmington, Del.; The Graphite Lubricator Company; $20,000; to manufacture, sell and deal in and with automobile accessories; William O'Keefe, E. E. Wright, George G. Steigler.

Chicago, Ill.; Locust Motor Sales Company; $20,000; Benjamin L. Easton, Allen K. Haines, John H. McKinney.

Indianapolis, Ind.; Centaur Motor Company; $15,000; to deal in motor accessories; A. M. Robbins, C. S. Dugger, C. P. Mooney.

Baltimore, Md.; Monumental Tire and Rubber Company; $5000; to deal in tires and rubber goods; Charles B. Brooks.

Wakefield, Mass.; Wakefield Motor Tire Reconstruction Company; $25,000; Thomas H. Dwyer, John D. Dwyer, Dennis F. Dwyer.

Detroit, Mich.; American Motors Tire Company; $300,000; N. W. McLeod, J. L. Johnston, William Grayson.

St. Paul, Minn.; The White Auto Supply Company; $25,000; J. T. White, H. L. White, M. N. Chrissinger.

St. Louis, Mo.; Locust Motor Sales Company; $20,000; Benjamin L. Easton, Allen K. Haines, John H. McKinney.

Camden, N. J.; The Camden Motor Service Company; $100,000; Morris Feinman.

Trenton, N. J.; Detroit Tire Company; $10,000; to deal in tires; Robert S. Mantell, Roy Wirtz, J. E. Welch.

Albany, N. Y.; Motor Products Corporation; $100,000; to manufacture products which enter into the construction of automobiles; J. A. Lederman, R. G. Coad, B. Lockwood.

Brooklyn, N Y.; Keystone Equipment and Supply Company; $2000; Davis Liederman, Jacob Liederman, Alexander Liederman.

Brooklyn, N. Y.; Overtire Service Company, Inc.; $1000; to manufacture tires and rubber goods; Isaac Slutzky, Abraham Kempner.

Buffalo, N. Y.; Ellis-Smith Manufacturing Company; $50,000; to make hardware supplies and automobile specialities; William Ellis, M. S. Ellis, S. M. Smith.

New York, N. Y.; Shean Laboratories, Inc.; $50,000; to deal in auto specialties; B. F. Crosby, C. B. and G. C. C. Shean.

New York, N. Y.; Westgard Tire and Rubber Company; $1,500,000; to manufacture rubber tires and rubber goods.

Ashland, O.; The Eagle Rubber Company; $50,000; Harry R. Gill, Harry V. Pohle, J. E. Arnold, J. W. Dash, Clyde C. Scherick.

Cincinnati, O.; Corcoran Tire and Rubber Company; $10,000; to manufacture motor car supplies; Frank E. Wood, W. Catherine Smith, Charles Sawyer, S. A. Headley, Rose Schook.

Akron, O.; Supreme Rubber Company; $25,000; Chester A. Telts, Dan Schmidt, T. J. Seibert, George L. Curtice, Max R. Read.

Cleveland, O.; Dann Products Company; $600,000; to manufacture accessories;

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George B. Harris, Joseph J. Klein, M. A. Close, S. M. Davis, N. C. Beckerman.

Cleveland, O.; The Sixth City Gasoline Supply Company; $10,000; Joe Wilder, Harry Siegel, Paul W. Stanley, G. Z. Weintraub, E. W. Breyer.

Cleveland, O.; The Zuerl Auto Fuel and Supply Company; $10,000; Fred W. Zuerl, W. Norris, J. M. Walker, Joseph N. Ackers, George S. Myers.

Columbus, O.; The Ohio Puncture Plugger Sales Company; $25,000; to manufacture tire repair articles; C. C. Cooke, Earl Browne, H. R. Shaffer, W. R. Aldrich, A. W. Raymond.

Oldtown, O.; Oldtown Rubber Company; $30,000; to manufacture rubber articles; David Shearman, Leroy M. Bickett, Gertrude P. Bickett, D. Agnes Bickett, Pearl Means.

Unclassified Incorporations Recently Made.

San Francisco, Cal.; San Francisco Taxi Car Company; $25,000; G. W. Shaw, Charles W. Kletsche, W. J. Kelly, George K. Kelly.

Chicago, Ill.; Automobile Insurance Service Company; $5000; L. G. Hurd, G. D. Forkner, L. J. Lally.

Laporte, Ind.; The Auto Power Company; $25,000; L. H. Russell, L. Darrow, E. L. Van Dolson.

Lawrence, Mass.; S. & F. Protection Auto Light Company; $10,000; Edward McAnally, Louis E. Stevens, Eldredge J. Fairbrother, Edgar M. Earley.

Worcester, Mass.; Jernberg Metal Treating Company; $10,000; to do all kinds of heat treating of steel, such as hardening, tempering, carbonizing and annealing; president and treasurer, Ralph V. Jernberg; clerk, Louis E. Brightman; Mildram M. Ishman.

Worcester, Mass.; Morgan & Corey, Inc.; to deal in automobile electricity; James L. Morgan, Ralph L. Corey, Helen G. Rogers.

Albany, N. Y.; The People's Auto 'Bus Line; $5000; to operate a 'bus line out of the city; Warren A. Salisbury.

Brooklyn, N. Y.; Bryant Taxi Company, Inc.; $15,000; B. R. Shears, B. V. W. Owens, W. W. Rudd.

Brooklyn, N. Y.; Progressive Motor Trucking Company, Inc.; $1000; Carmele Mazzahy, Carmele Antonuccio, Joseph Sassano.

New York, N. Y.; Frucht Sales Corporation; $10,000; Rose Frucht, Sigmund Frucht, Heinrich Frucht.

Richmond, Va.; Crawford Auto Carriage Trimming Company; $15,000; B. O. Cone.

Akron, O.; Akron Tire Repair School Company; $10,000; to conduct a school to teach tire repairing; C. B. Keener, Walter G. Kirkbride, F. M. Williams, W. R. Peppers, Ivo J. Flory.

NEW BUILDING OPERATIONS.

Contracts Made and Plans Contemplated for Garages, Repair Shops and Service Stations.

In this department is presented a record from the various states of the plans and specifications in course of preparation by individuals and concerns, of the contracts awarded for the erection of new garages and the like, of additions, improvements and alterations either already made or under consideration, and of the business removals and new locations that have taken place within the past month.

Plans and Specifications.

Bristol, Conn.; Charles T. Treadway; one-story private garage, 24x30.

New Haven, Conn.; Samuel Cohen, 778 Grand avenue; one-story garage, 66x28.

Waterbury, Conn.; Overland Waterbury Company; H. I. Smith, manager; two-story commercial garage, 100x183; $10,000.

Waterbury, Conn.; E. H. Cowles, 427 Willow street; one-story garage, 36x100; $6000.

Washington, D. C.; J. W. Hechinger, 614 M street, N. W.; one-story brick garage, 12x25; slag roof, electric lighting; $1000.

Atlanta, Ga.; Georgia Railway and Power Company; one-story fireproof garage and service station, 84x250.

Chicago, Ill.; Alliance Garage; one-story garage, 75x121.

Chicago, Ill.; Louis Becker, 847 W. Maxwell street; one-story garage, 25x25.

Chicago, Ill.; P. F. Olson, 137 N. Dearborn street; one-story garage, 26x22.

Chicago, Ill.; G. J. Miller, 140 South Dearborn street; one-story garage, 104x142.

Chicago, Ill.; Edward Cable, 3225 Wilson avenue; one-story public garage, 50x125; $8000.

Chicago, Ill.; George E. Wright, 4639 Ravenswood avenue; one-story garage, 50x165.

Chicago, Ill.; Larson & Arlanson, 3210 Sheffield avenue; one-story public garage, 50x125; $8000.

Chicago, Ill.; Drover Garage Company, 4153 S. Halsted street; one-story garage, 150x117; $20,000.

Chicago, Ill.; H. Glesler, 1300 Milwaukee avenue; one-story garage, 24x80.

Monmouth, Ill.; L. T. Hall; one-story garage; $8000.

Oak Park, Ill.; T. S. Harrigan, 109 South Menard avenue, Chicago; one-story public garage, 57x123; $12,000.

Peoria, Ill.; Seymour-Jefferson Hotel; one-story private garage, 15x25; $1500.

Markleville, Ind.; Hardy & Son; one-story public garage and shop, 46x100.

Council Bluffs, Ia.; Leonard Everitt, 810 Second avenue; one-story garage, 100x125; $20,000.

Davenport, Ia.; Lee, Brown & Duster Company; one-story garage and machine shop, 40x70; $10,000.

Sioux City, Ia.; H. A. Wetmore, 515 Sixth street; two-story garage, 50x150; $35,000.

Paducah, Ky.; Paducah Automobile and Manufacturing Company, 117 Broadway; one-story automobile building; brick; install milling machine, lathe and other equipment; $4000.

Baltimore, Md.; Henry Monberger, 34 N. Chase street; one-story garage, 88x62; $1200.

Baltimore, Md.; City Realty Company, 2 E. Lexington street; one-story brick commercial garage, 45x25; on Monroe street, between Lotman and Lawrence street; capacity 75 cars.

Baltimore, Md.; Robert M. Stein; three-story reinforced concrete garage and automobile show room, 32.9x90; at 12 and 14 East Mt. Royal avenue.

Boston, Mass.; E. R. Chapman, 44 Broomfield street; three-story garage, 104x104; fireproof; $100,000.

Boston, Mass.; A. A. Geisel, 293 Bridge street; one-story garage, 66x110; $20,000.

Cambridge, Mass.; Sarah P. Scully, 185 Devonshire street, Boston; one-story garage, 100x100; $10,000.

Gardner, Mass.; O. A. Sylvester, 32 Nicholas street; one-story garage; $20,000.

Methuen, Mass.; Richard Cullinane, 288 Essex street, Lawrence, Mass.; two-story public garage, 88x88; $10,000.

New Bedford, Mass.; Standard Oil Company of New York, 26 Broadway, New York; one-story garage, 43x60; $7500.

Northbridge, Mass.; B. H. Quinn, Bank building; one-story public garage, 102x60.

Salem, Mass.; Goldberg Brothers; two-story garage, 60x80; $20,000.

Springfield, Mass.; Adolph A. Geisel, 244 Main street; one-story garage and show room, 66x110; $9000.

Waltham, Mass.; West End Garage Company; one-story public garage, 100x100; $30,000.

Watertown, Mass.; J. C. Morgan, rear 82 Prentiss street; one-story garage; 50x100.

Whitinsville, Mass.; B. H. Quinn, 30 Forest street; one-story public garage; 102x60.

Worcester, Mass.; Bernard Press, 1 Granite street; one-story garage, 83x32.

Detroit, Mich.; Charles Gauss, 179 Grand River avenue; one-story private garage, 40x50; $5000.

Grand Rapids, Mich.; F. Welter, 635 Fulton street; one-story garage, 45x76; $7000; lessee, Charles Onwald.

Lansing, Mich.; W. D. Hodson, 210 N. Grant street; two-story garage, 28x47; $7000.

Vicksburg, Mich.; Tobey Bros.; one and two-story garage and sales room, 60x80; $10,000.

St. Paul, Minn.; Paul E. Henninger; one-story commercial garage, 50x64; $7000.

Kansas City, Mo.; G. C. Neff, 1515 Genesee street; one-story garage, 145x105; $25,000.

St. Louis, Mo.; Nolte & Naumann, Fullerton building; one-story garage, 54x130; $10,000.

Webb City, Mo.; Empire Auto Company; one-story garage, 100x100; $8000.

Meridian, Miss.; Bastick Lumber and Manufacturing Company; one-story garage; $7000.

Portsmouth, N. H.; Silas Pierce & Co., Ltd.; one-story garage, 25x32.

Bridgeton, N. J.; G. R. Edell; one-story garage, 50x100; $8000.

Jersey City, N. J.; American Musical Supply Company, 451 Communipaw avenue; two-story garage, 40x44; $5000.

Newark, N. J.; William H. Connolly Company, Inc.; one-story garage, 50x100; at 495-97 12th avenue; $5000.

Newark, N. J.; Galinken Brothers, 90-94 Somerset street; one-story garage, 75x95; $9000.

Newark, N. J.; Michele Petillo, 40 Stone street; one-story garage; $4000.

Newark, N. J.; Mrs. E. E. Bond, 138 Orchard street; one-story garage, 50x100; $5000.

Newark, N. J.; Clarence Miller; one-story garage, 67x95; $10,000.

Newark, N. J.; Frank Magaro, 78 Seventh avenue; one-story garage, 30x95; $4000.

Newark, N. J.; Adolph Hollander & Sons, 143 E. Kinney street; one-story garage, 26x100; $5000.

New Brunswick, N. J.; E. Mount, Englishtown, N. J.; three-story public garage, 40x104; $15,000.

Orange, N. J.; Gertrude H. Shepard, 65 Haywood avenue; one-story garage, 30x33; $3000.

Paterson, N. J.; Martin White, 729-31 Madison avenue; one-story public garage, 50x90; $5000.

Paterson, N. J.; A. M. Harmieler, 10 Bank street; two-story garage, 50x100; $10,000.

West Hoboken, N. J.; N. N. Trabilcy, 516 Monastery street; two-story garage, 83x100; $25,000.

Brooklyn, N. Y.; Peter Linbloom, 716 East 14th street; one-story garage, 40x100; $8000.

Brooklyn, N. Y.; J. F. Duffy & Co.; one-story garage, 45x60; $5000.

Brooklyn, N. Y.; John O'Rourke; one-story garage, 50x100; $7000.

Brooklyn, N. Y.; Max Hirsch, 391 Fulton street; one-story garage, 25x100; $4000.

Brooklyn, N. Y.; Milton Reeves, 480 Monroe street; one-story garage, 50x100x200; $7000.

Brooklyn, N. Y.; Charles J. Goebel, 558 Macon street; one-story garage, 50x100; $7000.

Brooklyn, N. Y.; Sarah Levine, 334 Utica street; one-story public garage, 40x118; $7500.

Brooklyn, N. Y.; Michael Tuck, 855 Park place; one-story garage, 50x115; $800.

Brooklyn, N. Y.; J. Robert Gordon, 7505

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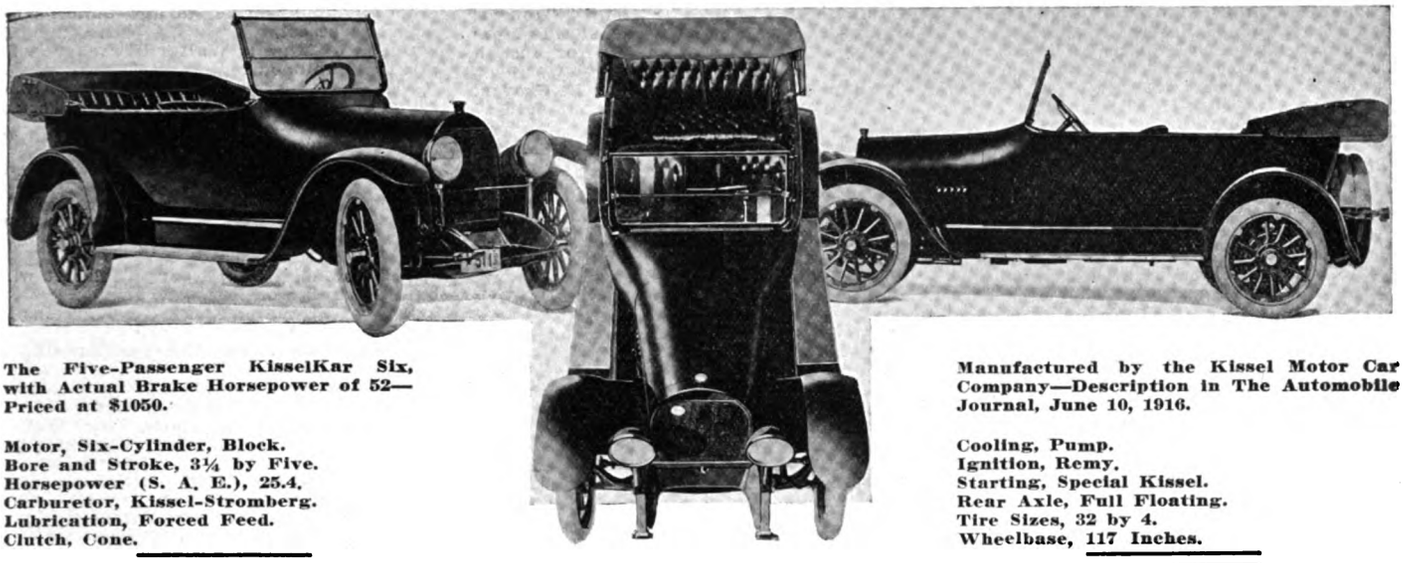
The KisselKar Hundred Point Six Model.



The Five-Passenger KisselKar Six, with Actual Brake Horsepower of 52—Priced at $1050.

Motor, Six-Cylinder, Block.
Bore and Stroke, 3¼ by Five.
Horsepower (S. A. E.), 25.4.
Carburetor, Kissel-Stromberg.
Lubrication, Forced Feed.
Clutch, Cone.

Manufactured by the Kissel Motor Car Company—Description in The Automobile Journal, June 10, 1916.

Cooling, Pump.
Ignition, Remy.
Starting, Special Kissel.
Rear Axle, Full Floating.
Tire Sizes, 32 by 4.
Wheelbase, 117 Inches.

Fifth avenue; one-story garage, 50x100; $12,000.

Brooklyn, N. Y.; T. S. Driscoll, 316 20th street; one-story garage, 20x100; $3000.

Buffalo, N. Y.; William W. Gutekanst, 59 Altruria street; one-story garage, 36x90; $2500.

Buffalo, N. Y.; A. Panimo, 169 E. Genesee street; one-story garage, 22x50; $2000.

Buffalo, N. Y.; Larkin Company, 663 Seneca street; one-story garage, 58x108; $7500.

Buffalo, N. Y.; Dr. William Mehl, 73 Genesee street; one-story garage, 22x29.

Elmhurst, L. I., N. Y.; Victor C. Webber; two-story garage, 46x31; $5000.

Far Rockaway, L. I., N. Y.; William Hoffman, Bayview and Forest avenue; two-story garage, 20x26.

Gloversville, N. Y.; Jones & Naudin, 22 South Main street; two-story garage, 40x25.

Long Island City, L. I., N. Y.; William H. Rae, 42 Pearson street; one-story garage, 40x88; $10,000.

New York, N. Y.; Christian Voindrain, 412 East 147th street; one-story garage, 75x95; $20,000.

New York, N. Y.; George Bockhans, 1277 College avenue; one-story garage, 25x85; $3000.

New York, N. Y.; Edward Breslin, 601 W. 139th street; one-story garage, 40x152; $12,000.

New York, N. Y.; Patton & Beekman, 2293 University avenue; one-story garage, 75x22; $5000.

New York, N. Y.; Charles W. Hoffman, 307 W. 137th street; five-story garage and storage station, 57x153; $40,000.

New York, N. Y.; William Bradly, 1 Madison avenue; three-story public garage, 231x100; $100,000.

New York, N. Y.; Daniel Meenan, 2 Amsterdam avenue; six-story auto service station, 100x100.

New York, N. Y.; Thomas G. Patterson, Inc.; 637 W. 55th street; one-story auto service station, 100x130; $30,000.

Ridgewood, L. I., N. Y.; Robert Weissmantel, 2311 Cornelia avenue; one and two-story garage, 80x72; $12,000.

Rochester, N. Y.; James Specco; one-story public garage, 50x100.

Rochester, N. Y.; W. A. Naramore, 110 Westminster road; two-story garage, 100x116; $20,000.

Schenectady, N. Y.; Indian Garage Company, 807 Grant avenue; one-story garage, 34x65; $4000.

Yonkers, N. Y.; Ernest Pople, 18 Sunnyside drive; one-story garage, 24x34; $5000.

Cleveland, O.; F. A. Quail, 2103 East 83rd street; one-story garage, 23x31; $4000.

Cleveland, O.; Gustave Zemore, 5013 Quincy avenue; one-story garage, 44x70; $4000.

Cleveland Heights, O.; James A. Harris, Jr.; 2311 Stillman road, Cleveland; two-story private garage, 32x22; $6000.

Springfield, O.; Frank Talbott, 728 South Fountain avenue; one-story private garage, 24x30.

Toledo, O.; Chevrolet Automobile Company, Thomas H. Bonnell agent; two-story service station, 60x100; $50,000.

Harrisburg, Penn.; William P. Starkey; two-story garage, 25x30; $4000.

Warren, Penn.; Frank Morrison; one-story garage, 21x24; $2000.

Warren, Penn.; F. B. Jackson; one-story garage, 21x26; $2000.

Norfolk, Va.; F. F. Wilkinson & Co., 310 Arcade building; semi-fireproof garage, 110x73; $3200.

Richmond, Va.; Kate Wittkamp; one story brick garage; $4000.

Black River Falls, Wis.; August Berg, Melrose, Wis.; one-story garage, 90x80; $10,000.

Black River Falls, Wis.; J. R. McDonald; one-story garage, 45x120; $10,000; lessee, Hogg & McNianners.

Brown Deer, Wis.; Harry L. Bradley, 764 Stowell avenue, Milwaukee, Wis.; one-story garage, 25x30.

Neenah, Wis.; Henry Sherry; one-story private garage, 60x70; $5000 to $6000.

Neenah, Wis.; Julius Denhardt; one-story private garage, 60x120; $10,000.

Milwaukee, Wis.; O. M. Fritz, 976 Summit avenue; one-story garage, 14x20; $2000.

Rhinelander, Wis.; Morgan Garage and Auto Supply Company; J. G. Morgan, manager; one-story garage, 60x140; $12,000.

Contracts Awarded for New Buildings.

Los Angeles, Cal.; R. Preston, 2834 Council street; concrete garage, 22x32; for John Eickner, 804½ California street; $350.

New Haven, Conn.; C. W. Murdock, 185 Church street; one and two-story public garage; $25,000.

Chicago, Ill.; J. Jackson, 1052 Buena avenue; one-story garage, 65x120; $8000.

Chicago, Ill.; J. K. Jensen, 1620 Humboldt boulevard; one-story garage, 125x50; $25,000.

Chicago, Ill.; H. M. Hincz, 53 W. Jackson boulevard; one-story garage, 45x130; $15,000.

Chicago, Ill.; Samuel Kovitz Brothers, 130 N. Clark street; one-story garage, 55x165; for John K. Shortall, 1665 Prairie avenue; $15,000.

Chicago, Ill.; V. A. Hackel, 7027 East End avenue; one-story garage, 44x49 and 56x189.

Evansville, Ill.; Luther Miller, 716 Foster street; two-story garage, 50x38; $15,000.

Fort Wayne, Ind.; Monroe Snyder, 2318 Chestnut street; two-story garage, 32x41; for Dr. William O. McBride, 609 W. Wayne avenue; $9000.

Hammond, Ind.; Hohman Estate; one-story public garage, 50x86; $4500.

Baltimore, Md.; West Construction Company, Knickerbocker building; one-story garage, 21x88; for Wentworth Apartment Company; $5000.

Baltimore, Md.; Consolidated Engineering Company, Calvert building; three-story garage, 33x90; for Automobile Exchange and Garage Company; Robert M. Stein, manager, 408-10 N. Calvert street; $20,000.

Baltimore, Md.; Blake & Engel, Law building; one-story brick garage, 17x23; in rear 2306 Maryland avenue; for Robert L. Harris, 2027 Kennedy avenue.

Boston, Mass.; Samuel Altman, 720 Commonwealth avenue; one-story automobile sales room and service station, 115x268.

Boston, Mass.; Lovering & Gerringhues, 141 Milk street; two-story garage, 117x49; for Joseph Rittenbert, 103 Waumbeck street; $40,000.

Boston, Mass.; Smith Carriage Company; five-story garage and automobile repair shop, 65x170; $100,000.

Boston, Mass.; Boyd & Berry, 11 Grampian way; two-story garage, 200x100; $80,000.

Fall River, Mass.; Thomas E. Logan, 77 Sixth street; two-story garage, 90x112; for Wilfred Sylvan, 3100 N. Main street; $18,000.

Holyoke, Mass.; La Libertie Brothers, 263 Oak street; one and two-story public garage, 120x60; for Dydak Piekos, 147 Lyman street; $18,000.

Lee, Mass.; D. J. Hickey, Miller house, Great Barrington, Mass.; one-story garage, 40x160; for James T. Owens; $30,000; lessee, Richard Benjamin.

Watertown, Mass.; William H. Illiffe, 35 Irving street; two-story garage and chauffeur's apartment; 28x23; for Ward M. Oltis; $3000.

Watertown, Mass.; J. P. Desrochers, 225 Watertown street; one-story garage, 64x23; for Mrs. Alice M. Silsbee, 47 Main street; $4000.

Worcester, Mass.; O'Connor & Anderson, 20 South Stowell street; one-story public garage, 54x45; for Abraham Berkowitz, 5 Chapin street.

Detroit, Mich.; W. C. Ackman, 1352 Grand River avenue; one and two-story garage 60x108; $8000.

Holland, Mich.; Boner & Smenge; one-story garage, 40x80; for M. Boone; $4000.

Pontiac, Mich.; Howard Fawcett, two-story garage and automobile sales room, 50x208; $20,000.

Saginaw, Mich.; Walz Hardware Company; one-story garage, 80x100; $10,000;

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lessee, Republic Motor Truck Sales Company.

Saginaw, Mich.; Garber-Buick Auto Sales Company; four-story garage and sales room, 60x120; $20,000.

Hannibal, Mo.; Hannibal Construction Company, 507 Hannibal Trust Company building; two-story public garage, 75x85 and wing 35x40; for T. L. Anderson, 217 South Maple street; $12,000.

Kansas City, Mo.; H. Maforie, 1224 Monroe street; one-story garage, 24x50; for E. P. Madorie, 832 Reserve Bank building; $5000.

Kansas City, Mo.; W. N. Walker, 325 High street; one-story garage, 50x110; for Westport Laundry, 3954 Central street; $6000.

Palmyra, N. J.; Richmond Construction Company, Moorestown, N. J.; one-story garage, 40x100; for Robert Thomas; $3000.

Easthampton, L. I., N. Y.; Barnes Brothers; two-story garage, 20x30; for Francis Newton; $2500.

Pelham, N. Y.; Smith & Leo, 103 Park avenue; two-story garage, 27x22; for Mrs. Cicelia A. Coffiu; $4000.

Asheville, N. C.; J. V. Miller, brick and stone garage at 43 Broadway; 42x92; asbestos composition roofing, concrete basement floor, balance flooring wood, electric elevator, 5000 pounds capacity; for J. S. Earle; $7000.

Winston-Salem, N. C.; Travers Wood Company, Richmond, Va.; one-story fireproof garage; for Leak-Cobb Company; $10,000.

Springfield, O.; R. G. Walker, 609 Dilbert avenue; two-story private garage, 25x34; for Mrs. E. Myers; $2500.

Tulsa, Okla.; Emmett Benson; one-story garage, 100x140; for H. C. Stahl and M. A. Yormkman, 1217 South Baltimore street; $16,000.

Harrisburg, Penn.; Joseph Pomraining, 1918 N. Second street; two-story garage, 40x125; for G. W. Myers, Hummel and Buckthorn streets; $3800.

Philadelphia, Penn.; Henry A. Hobert; one-story brick garage, 26x50; north side Windrim avenue; east of 13th street; for Albert J. Hamlin; $1500.

Philadelphia, Penn.; Alfonso Verdi; one-story brick and stone garage, 19x20; at 828 North 63d street; for A. D. Campbell; $1150.

Philadelphia, Penn.; C. A. Legates; one-story brick garage, 50x90; at 329 Bross street; for Emil J. A. Thelenburg; $2000.

Philadelphia, Penn.; Barnes Brothers; one-story brick and stone garage, 20x53; west side Collins street, north of Ontario street; for George W. Sperr; $1600.

Philadelphia, Penn.; Conneen Construction Company; one-story brick garage, 52x90; north side Windrim avenue; west of 10th street; for E. Kobbolt; $6700.

Philadelphia, Penn.; Haas & Doettling; brick garage, 16x22; east side Edmund street, south of Bridge, for Conrad Buck; $600.

Philadelphia, Penn.; J. Y. Rippin, hollow tile garage, 12x18; west side 54th avenue; for John N. Steen; $500.

Philadelphia, Penn.; Thomas C. Duffy; one-story brick garage, 31x50; at 304-06 North Frazier street; $1000.

Philadelphia, Penn.; C. A. Collier; one-story brick garage, 23.2x36.9; south side Church street; east of State road; for A. M. and C. B. Siner; $1400.

Philadelphia, Penn.; Joseph Reed; one-story brick garage, 20x84; at 3546 North Seventh street; for Warren Koons; $1750.

Philadelphia, Penn.; Mitchell Brothers; one-story brick garage, 75x100; at 6234-38 Market street; for Joseph P. Petit; $8000.

Philadelphia, Penn.; C. West & Co.; brick garage, 11x18.6; at 1234 Allen Grove street; for William G. Lawson; $1000.

Philadelphia, Penn.; J. D. Fisher; brick garage, 53x16; northwest corner 62nd and Ludlow streets; for H. D. Lyster; $2000.

Philadelphia, Penn.; Stewart Brothers; one-story garage and machine shop, 68.6x107.2, rear No. 3065 Ruth street; for H. Linton and Brother; $7250.

Philadelphia, Penn.; G. W. Crosley; one-story garage, 16x36; at northeast corner Foulkrod and Leiper streets; for W. H. Bratton; $1800.

Philadelphia, Penn.; George C. Fossel; one-story brick garage, 37.10x40; at 5606 Utah street; $1580.

Philadelphia, Penn.; William R. Brown; two-story stone and brick garage, 18.7x52, at 2026 East Madison avenue; for H. H. McVaugh; $2500.

Philadelphia, Penn.; Henry Hobert; brick garage, 49.10x86.3, on east side Mervine street; south of Louden, for Joseph Fielding; $4000.

Philadelphia, Penn.; Thomas E. Grover; one-story brick garage, 65x44; at 6015-17 Hazel avenue; $1300.

Fredericksburg, Va.; Walter Snellings; one-story brick garage, 40x100; concrete floor, office, machine shop; for B. J. Marshall.

Fox Lake, Wis.; Henry Wegner; one-story garage, 18x40.

Hartford, Wis.; Edward Rippey and Benjamin Loos; one-story frame garage, 19x40; concrete foundation and floor, work shop, vulcanizing room.

Neillsville, Wis.; H. J. Naeler; one-story brick and tile garage, 50x80.

Niagara, Wis.; Niagara Garage and Transfer Company; 1½-story garage; concrete foundation, ornamental iron, skylight, metal ceiling and windows, steel sash, elevator, steel lockers.

Milwaukee, Wis.; William C. Redicker, 920 10th street; one-story garage, 30x21; at 10th and Wright streets.

Milwaukee, Wis.; W. E. Black, 927 Wells building; one-story garage, 25x38, at 882 Summit avenue; $1800.

Milwaukee, Wis.; William F. Johnson, 733 31st street; one-story garage, 58.8x20, for F. Douty, 889 Hackett avenue; $1200.

Milwaukee, Wis.; Ira Ludwig, 2316 Auer avenue; one-story garage, 45x120; $10,000.

Alterations, Improvements and Additions.

Hagerstown, Md.; Hull's Garage will be enlarged.

Constantine, Mich.; A. B. Wilson & Co. is building a brick addition 24 by 36 feet at the rear of the garage on West Water street.

Hanska, Minn.; H. H. Ling will enlarge his garage.

New York, N. Y.; The Garage Equipment Company has leased buildings at 52 West 127th street and will remodel same into a large garage.

New York, N. Y.; T. G. Patterson will make alterations to his garage which will cost $20,000. It is located at 637 55th street.

New York, N. Y.; The Rogers Motor Corporation, 1836 Broadway, has enlarged the used car department. The company is distributor for the Davis Light Six.

Bridgeton, N. D.; Joseph M. Elwell will erect an addition to his garage at a cost of $8000.

Grand Forks, N. D.; W. J. Pierce has turned the woolen mill, Third street and University avenue, into a garage.

Columbus, O.; The Standard Motor Car Company, agent for the Hudson and Milburn, has completed extensive changes to its sales rooms.

Cleveland, O.; The Willard Storage Battery Company will erect another unit at its plant at a cost of $85,000.

Rolette, S. D.; J. A. Charbonneau has bought a building and will remodel it as a garage.

Hillsboro, Tex.; The Carver building on West Franklin street is being remodelled into a garage.

Factories, Garages and Repair Shops.

Denver, Col.; D. C. Dodge is erecting a two-story auto accessory and shop building at 1315 Broadway at a cost of $15,000.

Washington, D. C.; Kennedy Brothers, Inc., will erect a new modern garage at a cost of $40,000.

Hailey, Ida.; The Pederson Auto Company has built a fireproof garage on upper Main street.

Chicago, Ill.; Alexander Bauer of 233 W. Huron street will erect a new garage at a cost of $70,000 on Larabee street.

Lewiston, Ill.; E. M. Keller will open a garage.

Kingsley, Ia.; William Grothaus will open a garage and repair shop.

Hutchinson, Kan.; James Freese is erecting a new brick garage building on Sherman street.

Chelsea, Mass.; Walter Fracker will erect a public garage at 167 Parkway.

New Bedford, Mass.; William D. Armitage of 1412 Pleasant street will erect a new cement garage on Ryan street.

West Newton, Mass.; Edward E. Blodgett will erect a new stucco garage at a cost of $5000. It will be located on Temple street.

Ada, Minn.; Ole Larson and Knute Mjolsness will conduct a repair shop and automobile sales room.

Bellingham, Minn.; George Schuett will build a garage on Main street.

Brownton, Minn.; Rickert & Karstens is building a garage.

Dassel, Minn.; Jean Pearl is building a garage.

Eagle Bend, Minn.; Peterson Brothers will erect a cement block garage.

Echo, Minn.; J. H. Butler and Walter Johannsen are erecting a garage and repair shop.

Elmore, Minn.; A. K. Anderson will erect a garage on the Central hotel site.

Mankato, Minn.; Dillner & Holbrook will erect a garage on Main street

Minneapolis, Minn.; E. E. Atkinson Company will erect a new garage at a cost of $5000.

Racine, Minn.; E. J. St. George is erecting a garage.

Rollingston, Minn.; F. F. Walch will erect a garage.

Wheaton, Minn.; E. C. and Elmer Nelson will open a garage in the Hokanson building.

Billings, Mont.; The Veatch Company will erect a one-story garage at First avenue South and 35th street, at a cost of $5000.

Sidney, Mont.; The Bendon Auto Company is erecting a garage.

Roundup, Mont.; V. N. Taylor has begun a new garage at Second avenue and First street, southeast.

Beatrice, Neb.; Anton Gerwick is building a new garage and machine shop.

Falls City, Neb.; A. R. Keim is building a new garage at 1901 Stone street.

Nebraska City, Neb.; Warren T. Neihart will open a garage.

Paterson, N. J.; William E. Hughey will erect a garage on Washington avenue at a cost of $5300.

New York, N. Y.; Max J. Crammer, president of Bretton Hall Garage, will erect a $100,000 garage at the corner of Third avenue and 70th street.

New York, N. Y.; Euell & Euell, 125 Sherman avenue, have designed a seven-story and basement fireproof garage with every modern equipment, located at 267 and 269 West 87th street. It is expected the building will be completed by September.

New York, N. Y.; K. L. S. Realty Company, 553 East 188th street, will erect a modern garage on Fordham road.

Rochester, N. Y.; A. Naramore will erect a garage and auto show room on East avenue. It will be of brick and stone and modern throughout and it will cost $35,000.

Beach, N. D.; Wilbur Hammon is building a garage 24 by 40 feet.

Bottineau, N. D.; C. R. Gleason is building a garage 50 by 140 feet.

Sentinel Butte, N. D.; C. K. Bennett is building a garage 50 by 80 feet.

Providence, R. I.; The Butler Hospital will erect a public garage.

Bruce, S. D.; Myron Budnay is building a garage on Main street.

Montrose, S. D.; The Byrne Mercantile Company will rebuild its garage.

Clarksville, Tenn.; The Carney Auto Company will build a garage opposite their present quarters on Third street. The building will have a frontage of 70 feet and a depth of 120 feet, with basement, giving storage capacity for 50 cars.

Milford, Utah; The Milford-Beaver Auto Company will build a brick garage and it will be built on the site of the present one.

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Ogden, Utah.; The Utah-Idaho Motor Company will build a new garage. The company handles the Chevrolet cars.

Toppenish, Wash.; Ed. Hoffman will erect a garage 46 by 36 feet. The building will be of tiled brick, with plate glass front and no centre posts, making it an ideal building for automobile purposes.

Madison, Wis.; The Madison Motor Car Company has under construction a two-story fireproof garage on Monroe street, opposite the Illinois Central tracks. The structure will have a floor space of 60 by 120 feet. When completed it will be the largest in the city.

Portage, Wis.; The Stanton Garage will build a large brick addition.

New Business Locations and Removals.

Los Banos, Cal.; The Westside Garage has moved into its large reinforced concrete building.

Washington, D. C.; The Harper Overland Automobile Company will be located at 1128 Connecticut avenue.

Boise, Ida.; The Bannock Motor Sales Company has removed from 206 South 10th street to 1010-12-14 Grove street. The Maxwell and Chalmers are handled.

Rockford, Ill.; The Collier Auto Company, distributor for Studebaker and other lines, has moved from the Majestic building to larger quarters in the Cook building, corner of Chestnut and South streets, where a complete service station has been installed.

Springfield, Ill.; The Jennings Auto Sales Company has moved into a new service station at the corner of 10th and Adams streets.

Evansville, Ind.; The Cole Motor Company has moved into its new station at 1407 Main street.

Indianapolis, Ind.; Frank E. Smith, trustee of the American Motors Company, Premier Motor Manufacturing Company, has moved his office to the second floor of the Russel M. Seeds building, 330 North Meridian street.

Baltimore, Md.; H. C. Clark, representative for the Master carburetor, is now located at 1124 Maryland avenue.

Baltimore, Md.; The Hylo Sales Company will be located in its new home on Mount Royal avenue. The new building will give a total floor space of 1054 square feet on the three floors.

Baltimore, Md.; Welding Works, Inc., is now located in the 1800 block Lovegrove alley. The proprietor of the new firm are Murrell & Foster.

Boston, Mass.; The Remy Electric Company has moved from Pleasant street to more desirable quarters at 8 Motor Mart, Park square.

Brockton, Mass.; Nathan E. Packard is now located at 221 Warren avenue, where a complete line of automobile tires and accessories are being carried.

Worcester, Mass.; J. C. Harvey, distributor for Haynes cars, has moved from 752 Main street to 880 Main street.

Worcester, Mass.; The K. & W. Rubber Company of New England, agent for Maxotires, is now located at 1 King street.

Detroit, Mich.; The Detroit branch of the Stewart-Warner Speedometer Corporation has moved into its new headquarters at Grand boulevard and Woodward avenue, from 1231 Woodward avenue.

Grand Rapids, Mich.; The Oswald Motor Car Company has moved its sales room and service station from 66 Sheldon avenue to 131 Michigan street, N. W.

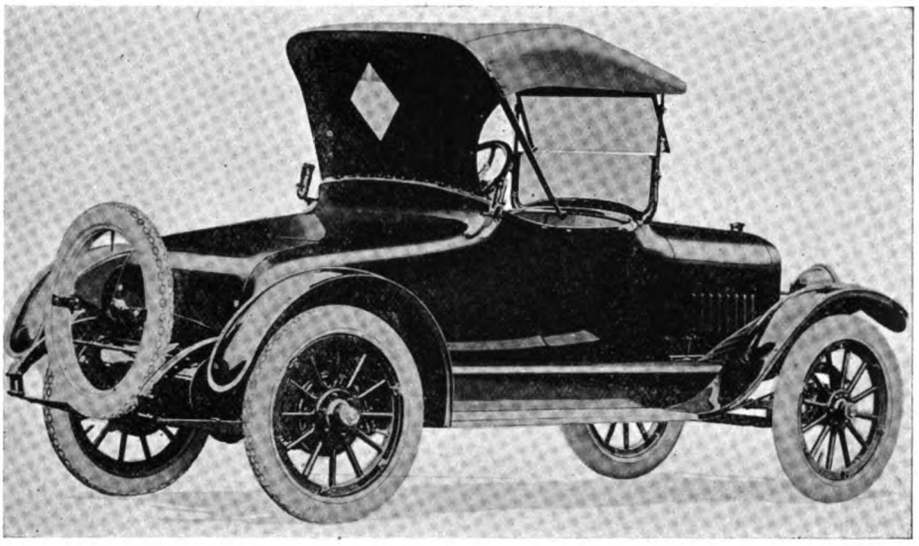
Middle River, Minn.; Rud & Dunrud have moved into their new garage.

Minneapolis, Minn.; The Brice Auto Company has moved to a new building at 1641 Hennepin avenue. The company represents the Grant.

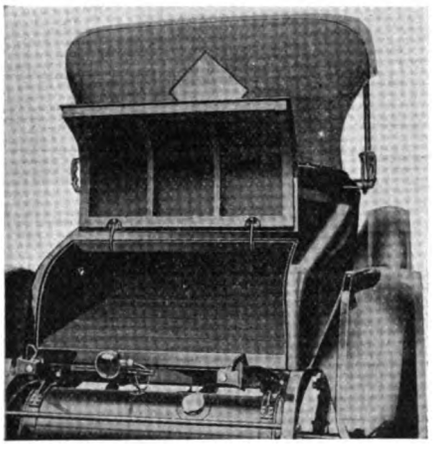
Minneapolis, Minn.; R. C. Smith Auto Company, distributor for the Velie, the Regal and the Stewart truck, has moved to a new building at 1601-03 Hennepin avenue.

Minneapolis, Minn.; E. A. Zolle has moved to a new building at 1639 Hennepin avenue. He has the agency for Hupmobile.

Allen Offers a Roadster.



The New Allen Two-Passenger Roadster for 1917.



Compartment for Bags, Etc.

Motor, Four-Cylinder, Block.
Bore and Stroke, 3¾ by 5.
Horsepower, 37.
Carburetor, Stromberg Special.
Lubrication, Forced Splash.
Clutch, Cone.
Cooling, Thermo-Syphon.
Ignition, Westinghouse.
Starting, Westinghouse.
Lighting, Westinghouse.
Rear Axle, Floating.
Gearset, Three Selective.
Wheelbase, 112 Inches.
Rear Springs, Underslung.
Control, Centre.
Drive, Left Hand.

Manufactured by the Allen Motor Company, Fostoria, O., and Priced at $795—Complete Technical Description in The Automobile Journal, July 10, 1916.

Rochester, N. H.; E. H. Hunter has moved his garage business from North Main street to the E. M. Hawkes plant, Winter street.

Trenton, N. J.; Harry J. Stout & Son, local distributors of the Lexington and Briscoe cars, will have their new home on Chancery street, in the building formerly occupied by the Adams Electric Company.

Buffalo, N. Y.; Mack's Auto Sales Company is now located at 1474 Main street, opposite Woodlawn avenue.

New York, N. Y.; The branch of the Burd Ring Sales Company has been removed to 1864 Broadway.

New York, N. Y.; The Marmon New York Company, formerly located at 1588 Broadway, is now at 42 West 62nd street.

New York, N. Y.; The Peugot Import Company has moved its sales room to Broadway, near 59th street.

Cincinnati, O.; The King Motor Company has moved from 804 Sycamore street to 238 East Eighth street.

Cleveland, O.; The Cleveland Velie Company has removed its sales rooms from 2217 Chester avenue to 1914 Euclid avenue, but the company will retain the Chester avenue location for its service station.

Philadelphia, Penn.; The Knight Tire and Rubber Company of New York, Inc., has removed its Philadelphia branch at 2033 Market street to 831 North Broad street.

York, Penn.; The Anderson Motor Company, Inc., will be located on King and Queen streets about Sept. 1.

Providence, R. I.; The Peckham Brothers Company is now located on Mathewson street, opposite the Emery theatre. The company has outgrown its quarters and has purchased the open lot at the corner of Elmwood avenue and Warren street, together with the house adjoining, where a new building will be erected.

Beaumont, Tex.; The Hardin County Garage Company is now located in its new building.

Galveston, Tex.; Charles Newding, formerly located at 2117 Postoffice street, will handle his automobile and accessory business at 2308-2310 Postoffice street, which building has been converted into a modern garage.

Butterworth, Va.; F. W. Beck & Co., is located 18 miles south of Petersburg, Va., on the S. A. L. Railway. The company is doing a business of about 60 cars a year, as sub-agents for Dodge Brothers and Pullman cars and direct dealers in Fords.

Seattle, Wash.; The Pacific KisselKar Company, handling the Kissel line, has opened headquarters at 806 East Pike street.

Seattle, Wash.; The Chevrolet Motor Car Company has moved into a home at 10th and Pike streets.

Milwaukee, Wis.; The Diener-Nelson Company, Haynes and Grant Six distributor, is now located at 622 Wells street.

Milwaukee, Wis.; Matthew C. Moore and J. W. Garbutt, representatives of the White Motor Company, has moved to a new service station at 456-458 Milwaukee street.

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NEW CONCERNS AND CHANGES.

General News Regarding Transfer of Ownership and Opening of Garages and Agencies and Changes of Names.

The following data relate to the establishment of new concerns, including agencies, garages, branches, service stations, repair shops, etc., and from valuable information. Herewith is also recorded the recent changes of names of business concerns in the industry and allied lines, and the transfers of ownerships of businesses. The record includes all the states and is classified for convenience.

Recent Transfers of Business Ownerships.

Parker, Col.; R. J. Woodbury and Walter Davis have formed a partnership to engage in the garage business.

New Haven, Conn.; George D. Knox, who handles the Monroe cars in Hartford county, has added New Haven county to his territory. A New Haven branch store is being fitted up at 1113 Chapel street.

Forreston, Ill.; R. M. Garman has purchased the Crombe Garage and will move his office to this building.

Indianapolis, Ind.; H. C. Sorden Transfer Company has changed its name to Clark Sorden Taxicab Company.

Newcastle, Ind.; Goodwin-Gallivan Motor Company has been changed to the Goodwin Brothers' Automobile Company.

Winamac, Ind.; Verne Holland and Eli Delano have dissolved partnership in the garage business.

Carson, Ia.; O. B. Henry has bought the garage of Chaney & Killion.

Davenport, Ia.; Robert McClelland has purchased the interest of S. H. Moorhead in the Moorhead & Dorman Tire Company, Perry street. The company will be known as Dorman-McClelland Tire and Supply Company.

Des Moines, Ia.; Boone Tire and Rubber Company has changed its name to Atlantic Tire and Rubber Company.

Fredericksburg, Ia.; Lloyd Morse has bought the Somers Garage in Somers, Ia.

Keokuk, Ia.; Todd & Baker have dissolved partnership. Mr. Todd will form a partnership with M. Ewing, who is building a garage on the corner of Seventh and Main streets.

Sioux Rapids, Ia.; Charles Degriselles has bought the Rapids Auto Company.

Athol, Kan.; Rowe & Albright have purchased the Meierhoff & Smith Garage.

Clay Centre, Kan.; Dennis F. Rock has purchased the Fred Peters Garage and repair business on Lincoln avenue.

Columbus, Kan.; Fred Baldwin has leased the Bottom Garage and has taken charge.

Larned, Kan.; Carl Chaddick and Harold Keast have formed a partnership for the sale of the Page and Maxwell cars.

McPherson, Kan.; S. M. Jones has bought the interest of Orton Talbot in the Talbot & Gibson Garage. The new company will handle the Ford, Oakland and Chandler.

Parker, Kan.; G. W. Depue has bought the garage and repair business of Richard Glaze.

Lowell, Mass.; Joe Lavelle has purchased a new tire shop in the Village House building from Herbert Hadley.

Springfield, Mass.; Walter M. Denman has taken over the U Auto Garage at 400 Dickinson street and has installed his stock of cars and parts in the new location. He is New England representative for the Brockway trucks.

Marshall, Mich.; H. G. Edwards has sold his interest in the Buick Sales Company to Howard Ferguson.

Hibbing, Minn.; H. F. Koepke has bought the old Town Hall Garage and will specialize on Ford repairs.

Howard Lake, Minn.; E. Y. Shaver has bought the interest of his partner, Brownfield, in the Howard Lake Garage.

Morton, Minn.; George Wells & Son have bought the Franklin Garage from Henry Halvorson.

Sanborn, Minn.; P. H. Posz has bought the Henslin Brothers Garage.

Sanborn, Minn.; E. D. Olsen has bought the John Voss Garage.

Slayton, Minn.; J. A. Cajacob has taken over the Murray County Auto Company.

Independence, Mo.; J. W. Kerr Auto Company has sold his business to Lee Strodtman, Frank Marshall and A. B. Pitts. The new firm will be known as the Strodtman-Marshall Auto Company.

St. Louis, Mo.; The Stiermann Vehicle Company has been appointed distributor for the Aurora demountable truck attachment, which converts a Ford chassis into a 2000-pound truck.

Columbus, Neb.; Samuel Gerber has bought an interest in the Lincoln Highway Garage in Silver Creek, Neb., and the firm name becomes House & Gerber.

Howells, Neb.; The Fajman Motor Company's garage and automobile business has been bought by Frank Lhotak.

Kearney, Neb.; Finch & Patterson have dissolved partnership and the garage business will be conducted by the Paterson Motor Company.

Oxford, Neb.; Fuller & Ayer have bought the Gupton & Banta Garage.

Niagara Falls, N. Y.; Charles Beers has sold his interest in the automobile agency to his partner, Frank Howell.

Norristown, Penn.; James S. Bold has purchased the Norris City Garage on Main street, above Astor. He is also the owner of the large Keystone Garage on West Main street.

Philadelphia, Penn.; Charles F. Sine has purchased and taken title to the one-story garage on south side of Locust street.

Bradley, S. D.; Clarence Hanson has bought a half interest in the Morgan repair shop.

Canova, S. D.; O. E. Countryman has bought the P. T. Wick Garage.

Gregory, S. D.; F. J. Jander has sold his garage to John Burrill.

Midway, S. D.; Elmer Franson has bought the Midway Garage.

Winner, S. D.; E. M. Brokens has bought the Eulwider Garage.

Williams, Vt.; T. E. Blodgett has sold his garage to V. J. Stark.

Harrisonburg, Va.; Harry L. Furr of the Harrisonburg Garage has purchased the Lowner building and will convert it into a modern garage and service station.

Norfolk, Va.; J. W. Tannehill has bought the garage business of C. C. Stahl.

Garages and Repair Shops Opened Recently.

New Haven, Conn.; F. W. Smith has opened an up-to-date tire repair plant at 35 Temple street.

Ft. Collins, Col.; M. L. Tillson will handle all kinds of automobile repair work, especially Ford work, in the Marsh Garage.

Solon, Ia.; The Zenishek Garage has opened for business.

Great Bend, Kan.; Santa Fe Garage, Kansas and 12th street, is now open for business.

Manhattan, Kan.; C. J. Davis and C. F. Apitz have organized the Davis & Apitz Auto Repair shop.

Topeka, Kan.; William A. Koepsiker has opened garages at Laurent and Kansas.

Lynn, Mass.; Valliere Brothers have opened their new modern garage at 444 Western avenue.

Annandale, Minn.; C. F. Miller has opened a garage.

Fairmont, Minn.; F. E. Wade has rented McCadden Garage.

Hopkins, Minn.; Shimota & Radosta has opened the Yellow Trail Garage at Excelsior and Seventh streets.

Hopkins, Minn.; John Svihel and Frank Stvan has erected a double garage.

Maynard, Minn.; George Ernest has opened a garage.

Spicer, Minn.; Christenson Brothers have opened their garage and are ready for business.

Starbuck, Minn.; Andrew Johnson has reopened his repair shop.

Stewart, Minn.; A. C. Kreger has opened a new garage.

Waseca, Minn.; H. Flower has opened a tire repair shop.

Bunceton, Mo.; Arthur Mayhew is now open for business in his brick garage, which has been completed.

Aurora, Neb.; V. C. Ummel has added a repair shop to his garage and sales rooms.

Fairbury, Neb.; J. Dillenbeck has opened a new garage.

Milford, Neb.; N. J. Schultz has opened a new garage.

Tarrytown, N. Y.; Albert W. Lee has opened a machine shop on Main street.

Belfield, N. D.; Joseph Gervais has leased the Red Trail Garage.

Providence, R. I.; The Longley Motor Sales Company has opened its new garage.

Roscoe, S. D.; B. J. Blake has opened a repair shop.

Wagner, S. D.; William Evers has opened a new garage.

Milwaukee, Wis.; The Lakeside Garage has opened for business. It is located on Brady street.

Agencies, Dealers and Service Stations.

Idaho Falls, Ida.; Browning Automobile and Supply Company has opened its new modern building. The company handles the Overland car and Federal tires.

Chicago, Ill.; Elcar Motor Sales Company has opened salesrooms at 1118 Michigan avenue. The company will handle the entire line of Elcars in the Chicago and surrounding territories.

Indianapolis, Ind; The Colonial Automobile Company will open an accessory, repair and parts store at 448 N. Capitol avenue. J. R. Morrison is manager.

New Orleans, La.; The Louisiana Motor Company, Inc., has opened offices and sales rooms at 621 St. Charles street and will handle Briscoe cars and Stewart trucks.

Baltimore, Md.; The Central Automobile Company, Market place and the Fallsway, distributor for Empire cars in Maryland, has been appointed representative for Nassau tires.

Boston, Mass.; The Standard Oil Company will add to its Cambridge plant a wagon repair shop for motor and horse drawn vehicles to cost $50,000.

Fosston, Minn.; The Home Oil Company has opened a filling station.

Baker, Mont.; J. W. Zook has purchased the L. P. Chuning Garage.

Poplar, Mont.; James Cairncross has opened a new garage, 50 feet square.

Thompson, Mont.; Charles First has taken charge of the Hoyt Garage.

Omaha, Neb.; W. S. Barker, distributor of the Dixie Flyer, has opened sales rooms at 2107 Farnum street.

Mineola, N. Y.; The Walters Rubber Company has opened a warehouse at 54 Main street. The company handles Federal tires.

Aberdeen, S. D.; The Southwestern Tire Supply Company has opened for business.

Burlington, Vt.; The B. F. Goodrich Company of Akron, O., has established a direct branch at 137 St. Paul street. L. E. Stone is manager of the new store. A complete line of Goodrich "Barefoots," Silvertown tires and accessories for automobiles, motorcycles and bicycles will be carried in stock.

Richmond, Va.; The Hartford Machine Screw Company of Hartford, Conn., has opened a branch office. It is managed by Taylor Brothers.

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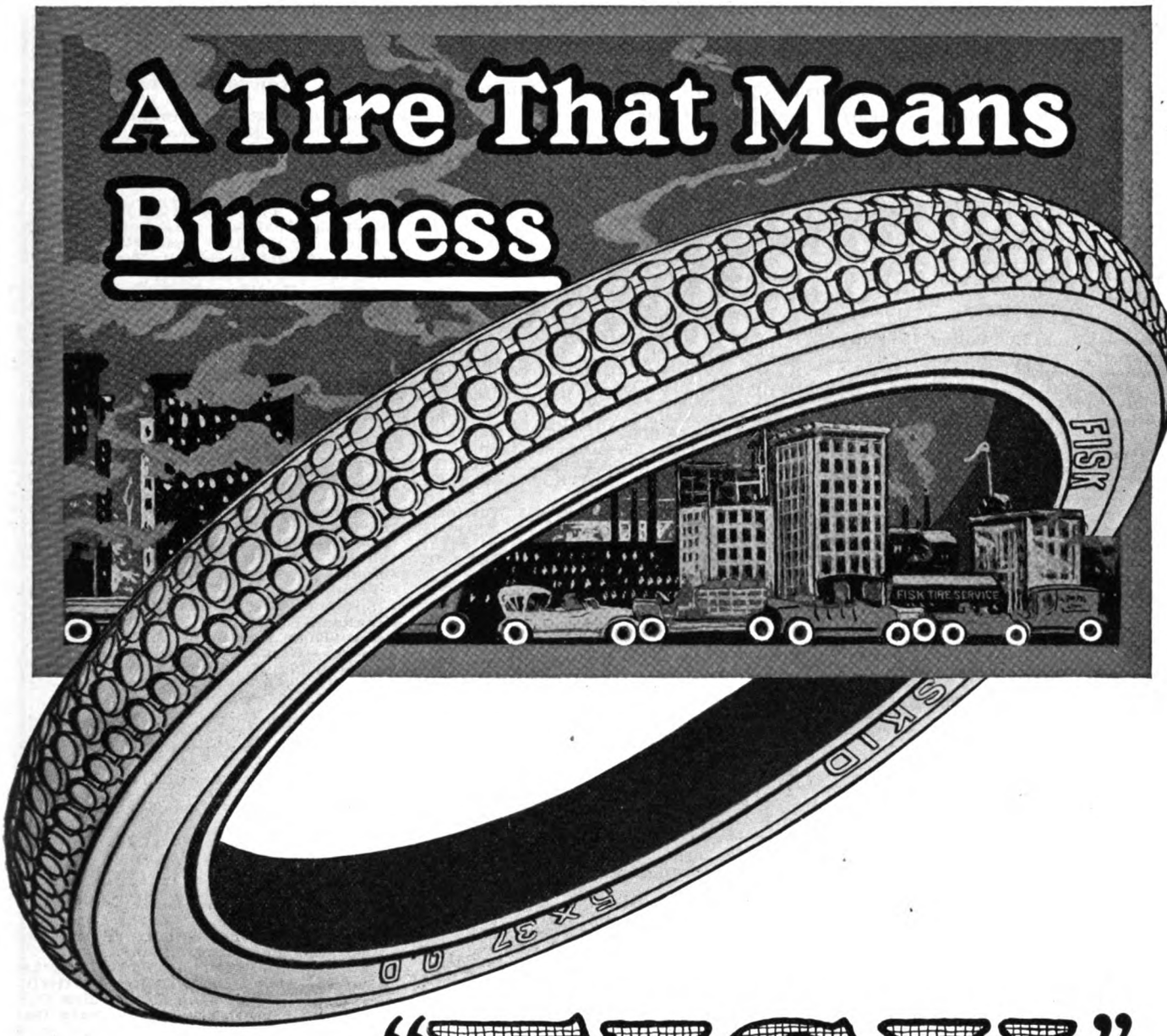

"FISK"

Trade Mark Reg. U. S. Pat. Off.
Time to Re-tire?
(Buy Fisk)

To Car Owners ***Fisk*** means a tire that represents full dollar-for-dollar value—to Dealers it means repeat sales and steady and certain Fisk profits. Just let your customers know you sell Fisk Tires—Start them ***Fiskward*** and make sure of their continued patronage.

THE FISK RUBBER COMPANY
of N. Y.

Home Office **Chicopee Falls, Mass.**

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AGENCIES RECENTLY APPOINTED.

Add to and Correct Your Mailing List—Symbol * Indicates Commercial Vehicle, † Electric, and ‡ Light Car.

ALABAMA.

Birmingham—Paterson Six, The Detroit Motor Co.

ARIZONA.

Williams—Maxwell, Seetwood & Towney.

CALIFORNIA.

Long Beach—King, J. S. Bolton, 133 American avenue.
Maricopa—Oldsmobile, West Side Garage and Machine Co.
Riverside—Oldsmobile, A. F. Isaacson.
San Diego—Oldsmobile, Pacific Motor Sales Co.
Stockton—Grant Six, Field Motor Car Co.
Whittier—Saxon, Walker Brothers.

COLORADO.

Buckingham—Pullman, A. O. Stout.
Ft. Collins—Chalmers, E. R. Hoppen.
Chandler, E. R. Hoppen.
Oldsmobile, E. R. Hoppen.
Steamboat Springs—Velie, Steamboat Mercantile Co.

CONNECTICUT.

New Haven—*Lippard-Stewart, N. B. Whitfield.
Waterbury—Oldsmobile, Louis Segall.

DELAWARE.

Wilmington—Paterson, W. H. Ryan.

DISTRICT OF COLUMBIA.

Washington—Briscoe, Miller Brothers.
Haynes, Charles E. Scharf.
King, Edelen Brothers Motor Company, 1612 14th street.

ILLINOIS.

Casey—Oldsmobile, David Nash.
Chicago—Overland, Charles W. Price.
*Sanford, The Maypole Motor Sales Co., 2642 Michigan avenue.
Chicago Heights—King, George Lane.
Elgin—Oldsmobile, Charles J. Moody, 60 River street.
Jerseyville—Studebaker, M. McMahon and Frank Philbert, Jr.
McLean—Oldsmobile, George Woodmancy.
Quincy—Abbott-Detroit, Moller Futterer Auto Saxon Co.
Wheaton—Oldsmobile, Holstein Brothers, 310 W. Front street.

INDIANA.

Elkhart—Oldsmobile, Indiana Auto Sales Co., 200 N. Main street.
Goshen—Oldsmobile, Teefarden & Putt.
Lindon—Oldsmobile, Lindon Harness Co.
Plymouth—Oldsmobile, F. H. Kuhn, corner Lake and Walnut streets.

IOWA.

Atlantic—King, Johnson Auto Co.
Dubuque—King, Harry G. Wiedorer, Coules Avenue Garage.
Mason City—Franklin, R. A. Morton.

KANSAS.

Kingsley—Case, Oster & Merten.
Oskaloosa—Overland, E. O. McCain.
Ottawa—Chalmers, Martin Brothers.

KENTUCKY.

Augusta—Oldsmobile, Mellor Garage Co.
Louisville—Interstate, The People Motor Co.
Maysville—Oldsmobile, Keith & Stephenson.

MAINE.

Augusta—Oldsmobile, State Street Motor Co.

MARYLAND.

Baltimore—Saxon, The Mar-Del Co.
Cumberland—Oldsmobile, Auto Tire Repair and Supply Co.

MASSACHUSETTS.

Boston—*Denby, J. D. McIntyre.
Troy Trailer, J. D. McIntyre.
Brockton—Maxwell, The White Garage, 42 Cottage street.
Fall River—Hollier "8," The Marshall Auto Sales Co., 79 Purchase street.
Greenfield—Cadillac, J. Willard Cobb.
Haverhill—Enger Twin Six, Lester K. Morse.
Lowell—Paige, E. J. Hylan, 451 Westford street.
*Vim, Philip Bileault.
Springfield—Apperson, Bunker & Bancroft Co.
Crow-Elkhart, Bunker & Bancroft Co.

MICHIGAN.

Battle Creek—Chevrolet, Chevrolet and Service Co.
Detroit—Hupmobile, The Schillo Motor Sales Co.
Interstate, Herbert H. Chalmers and W. C. Gueson-Smith.
Jackson—*Standard, Ben W. Haehnle.
Lansing—Auburn, Mills Automobile Sales Co.

MINNESOTA.

Mahomen—King, B. C. Shurler.
Minneapolis—Monroe, The Stinson Automobile Co.
Vim, J. H. Shields Co.
H. A. L., Whitcomb Littlewood Auto Co., 30 Eighth street, N.
Morristown—Elcar, C. C. Kisor.
Red Wing—Cadillac, The Bush Garage.

MISSISSIPPI.

Estill—Abbott-Detroit, J. T. Atterbury.

MISSOURI.

Ash Grove—Maxwell, Loren Turk.
Garden City—Dodge, The Wilhite Brothers.
Jefferson City—Dort, The Capital Garage.
Hudson, Arnhold Garage, Monroe St.
Pullman, Arnhold Garage, Monroe St.
Joplin—Oldsmobile, Haper Auto Co.
Meriden—Overland, Fred Chancellor.
Pleasant Hill—Ford, E. F. Thomas.
St. Louis—Detroiter, Newell Motor Car Co.
Simplex Crane, Simplex Crane Auto.
Springfield—Oldsmobile, Elgin Motor Sales Co.
Sweet Springs—Buick, John McGuire.

MONTANA.

Clentana—Dodge Brothers, Edward and A. Standig.
Linnep—Abbott-Detroit, O. J. Berg.

NEBRASKA.

Alliance—Oldsmobile, J. L. Nicloi.
Bertrand—King, G. O. Fairchild.
Broken Bow—Oldsmobile, Emery Bush.
Plainview—Oldsmobile, Mrs. Heman Taylor and Son.
Savard—Oldsmobile, Balson & Dickman.
York—Oldsmobile, G. F. White.

NEW YORK.

Brooklyn—Abbott-Detroit, Kesler & Tag.
New York City—Abbott-Detroit, Longenecker & Sanders.
*Hall, Kuehn & Metz.
Utica—Abbott-Detroit, Utica Auto Co.
Westfield—Oldsmobile, Howard & Rich.

NORTH DAKOTA.

Crosby—King, Rosseau Brothers.
Dickey—Crow, H. D. Mack.
Ford, H. D. Mack.
Landa—Oldsmobile, O. F. Olson.

OHIO.

Cleveland—Chalmers, The Logan-Fischer Motor Car Co., 1900 East 19th street.
Cincinnati—Abbott-Detroit, The Rose Hill Garage.
Columbus—Empire, The Campbell-Gilchrist, 172 North Fourth street.
Doylestown—*Koehler, N. R. Zimmerman.
Pandora—Oldsmobile, Pandora Auto Co.
Springfield—Oldsmobile, J. E. Crane, Fountain Ave. and S. Market Place.
Xenia—Oldsmobile, Pavey & Smith.
Youngstown—Oldsmobile, Clarke Auto Tire Co., 133 Lincoln avenue.

OKLAHOMA.

Ardmore—Reo, Warren Martin and J. M. Jones.
Checotah—King, Albert McKinney.
Durant—King, Dr. Norman Miller.
Elk City—King, Geo. F. Sisson.
Guthrie—King, H. L. Miller.
Oklahoma City—Franklin, The Books-Franklin Co.
Haynes, Lee Motor Car Co.
Ringling—King, R. O. Delaney.
Tulsa—King, Hughes Stone Co.
Wewoka—King, J. L. Mainard.
Yukon—King, Hamilton Motor Co.

OREGON.

Enterprise—Chalmers, Fred S. Ashley.
Portland—*G. M. C., Columbia and Carriage Works.
Roseburg—Chalmers, A. E. Kent.

PENNSYLVANIA.

Carbondale—Abbott-Detroit, Timothy Gilhool.
Connellsville—Oldsmobile, Connellsville Garage Co.
Conemaugh—King, S. S. Mack.
Everett—Oldsmobile, A. Karns.
Lebanon—Oldsmobile, Steitz Motor Car Co., 622 Cumberland street.
Monongahela—Oldsmobile, B. T. Forsyths.
Nazareth—Abbott-Detroit, James Itterly.
New Castle—King, King Motor Sales Co.
Pittsburg—*Chase, The Forbes-Craig Garage Co.
Saxton—Oldsmobile, E. E. Danderson.
Uniontown—Oldsmobile, W. H. Helmey.
Warren—Oakland, F. Adams and H. P. Lingo.

SOUTH CAROLINA.

Columbia—King, Consolidated Auto Co., 1316 Sumter street.

SOUTH DAKOTA.

Lake Preston—Oldsmobile, A. B. Maxam.
Mitchell—Oldsmobile, Central Auto Supply Co.

UTAH.

Salt Lake City—Abbott-Detroit, Atwood Auto Co.

VIRGINIA.

Roanoke—KisselKar, KisselKar Sales Co., 12 East Church street.

WASHINGTON.

Seattle—Abbott-Detroit, Abbott-Detroit Sales Co.
South Bend—Chalmers, L. B. Larson.
Spokane—Abbott-Detroit, A. Steen.

WEST VIRGINIA.

Wheeling—Mitchell, J. F. Holland, Marshall street.

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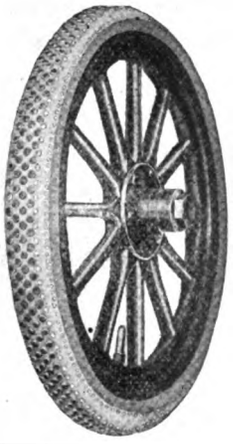
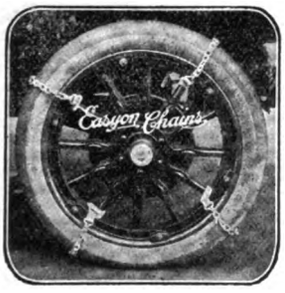
AUTOMOBILE ACCESSORIES
YOU OUGHT TO KNOW ABOUT

WOODWORTH TROUBLE-PROOF TIRES guaranteed against punctures and blow-outs for 5000 miles. Perfectly resilient and the most durable tires made.

WOODWORTH TIRE COVERS are steel studded leather covers. They protect the tires from all outside injury and roadwear; they prevent punctures and provide a non-skid that is always in place.

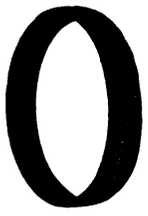
The Light Weight Covers are low in price and do not make any appreciable load on the car.





EASYON CHAINS are individual chains fastened to the spokes. They can be put on in a moment even when up to the hubs in mud. The handiest traction on earth. Every automobile should carry a set.

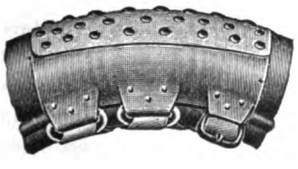
NO-STRETCH, NO-SLIP FAN BELTS are made of very strong woven fabric with especially treated horse hide leather facing that always hugs the pulleys perfectly.



WOODWORTH SPRING COVER and LUBRICATOR

A leather covering with a felt wicking on the inside for holding the oil. This cover laces over the springs completely enclosing them, keeping them perfectly clean and perfectly lubricated.

Makes the car ride always like new. Very easy to put on. Made for all sizes and styles of springs. The only way to obtain perfect spring action—better than any shock absorbers.



Light Strap Boot

WOODWORTH LEATHER TIRE BOOTS for weak or blow-out tires. Made in Hook-On, Lace-On and Strap-On styles. Studded on the wearing surface with steel studs, making them very durable. These boots do not deteriorate with age and are not injured by oil.

Send for dealers' discounts and prices of the above goods.

Leather Tire Goods Co., SOLE MANUFACTURERS, Niagara Falls, N. Y.

Canadian Factory, Niagara Falls, Ont.

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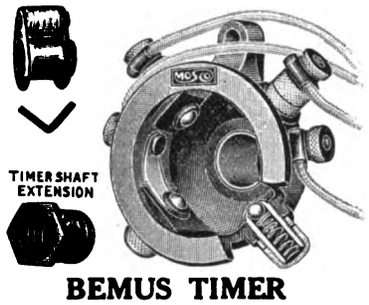
MOSCO MOTOR SPECIALTIES CO.

FOR FORD CARS

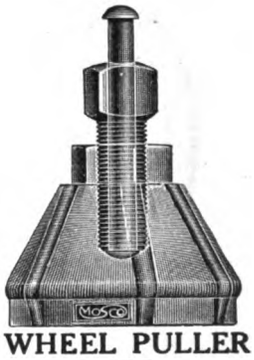
MOSCO MOTOR SPECIALTIES for Ford Cars are not equalled for quality, for service and dependability. No other equipment affords the same degree of satisfaction and no other compares with it for sales. MOSCO Specialties sell the whole year through. They are not dead, NOR SEASONABLE stock. And these are sold with discounts that insure the dealers big and constant profits.



BEMUS TIMER

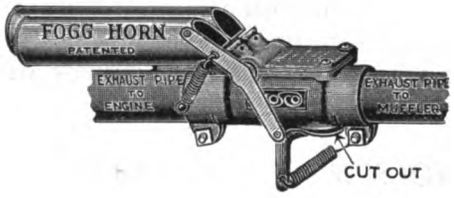
The 1916 type ball contact Bemus Timer, splendidly improved, with top wire connections, offset balls, extra long non-wearing roller, and reinforced arm, is the best ever produced. Price $2.50.

A loose plunger wheel puller for Ford, Overland, Buick, Maxwell, Saxon and Chevrolet cars; a one-man tool. that never fails and can save time and labor. Information and prices at request.

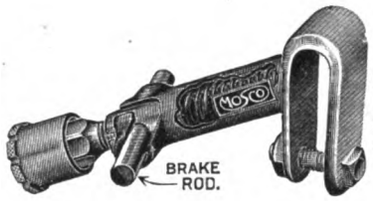


WHEEL PULLER

VALVE GRINDER



FOGG HORN



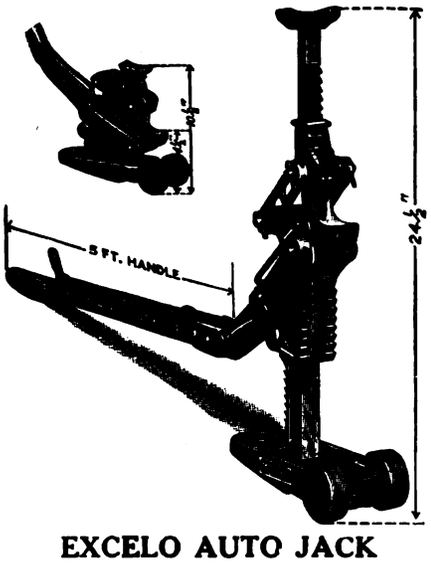
BRAKE ROD GUIDE

BRAKE SHOE

Mosco Valve Grinder is different in that with it valve grinding is an accurate mechanical operation. The principle is new, and the result is very rapid and superior work. It is made of high grade material and thoroughly guaranteed. Price $1.50.

The Fogg-Exhaust horn is fitted with a cut-out,—being a combined horn and muffler cut-out. Furnished with two pedals,—one for locking to hold the cut-out open. Price, with cut-out, $5; without cut-out, $4.50.

Brake Rod Guide—absolutely silences brake rod rattle; attachable quickly; and without pins. Prices, bronze, with grease cup, $1.25 pair; semi-steel, $1 pair; without grease cup, bronze, $1 pair; semi-steel, 80c pair.



EXCELO AUTO JACK

Mosco brake shoes for Ford cars are a one-piece type, cast of gray iron and faced with asbestos; they are highest grade construction and endure long use; the facing can be renewed for slight cost. Price, pair, $1.50.

Excelo Auto Jacks are designed for handling machines up to 800 pounds weight, with greatly compounded leverage to minimize labor; they are built of first quality material and will give service for years. The finest tool of the kind for garages, service stations, and repair shops. Sold with a satisfaction or money refund guarantee. Price at request.

Dealers: Write today for our catalogue and quotations.

MOTOR SPECIALTIES COMPANY

WALTHAM, MASSACHUSETTS.

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FIFTH AVENUE COACH COMPANY
STAGE LINES
MOTOR OMNIBUSES FOR PRIVATE HIRE

March 2nd, 1916.

Sheldon Axle & Spring Co.,
Mr. A. M. Laycock, C.E.,
Wilkes-Barre, Pa.

Dear Mr. Laycock:-

I am sending you today the brake bands removed from bus #252 which is equipped with your M-30 rear axle. The total mileage is 19,376 You will find the linings have worn through at one point. Perhaps you would like to keep these bands; if so, please send replacements. We consider these results extremely satisfactory.

Yours very truly,
Fifth Avenue Coach Company
Chief Engineer

SHELDON AXLE AND SPRING COMPANY
WILKES-BARRE, Pa.

May 25, 1916.

George Batten Company,
101 Fourth Avenue,
New York City.

Gentlemen:-

ATTENTION - MR. E. S. BALDWIN.

Referring to your letter of the 19th inst. with regard to the M-30 Axle running on the Fifth Avenue Coach Company's bus. I am sending you herewith a copy of Mr. Green's letter to the writer which you may publish.

I might say that we have been using THERMOID almost exclusively for this last four years with unqualified success.

The particular brake bands removed from bus 252 were fitted with your brake lining.

Yours very truly
SHELDON AXLE & SPRING COMPANY
Arthur G. Laycock
Chief Engineer

AGL:GAM
(Encl.)

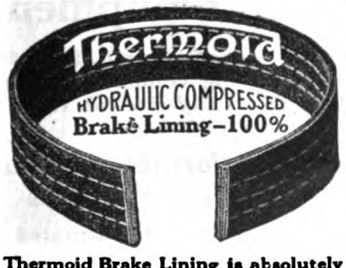
Testimony That Proves Service

Can you imagine anything that could give Brake Lining as severe treatment as a Fifth Avenue coach, running over rough New York streets day and night—carrying heavy loads—stopping almost at every block? And the stops must be **certain** and **sudden**, because many human lives are at stake.

19,376 Miles

The Sheldon people (who kindly consented to our using these letters) have been making springs and axles for over 50 years. And because their products are so dependable they chose the most dependable brake lining for this Bus, which covered 19,376 miles under the severest of conditions. Thermoid is their choice for everything. Please read the above letters carefully—they speak volumes for Thermoid.

Thermoid
HYDRAULIC COMPRESSED
Brake Lining-100%



Thermoid Brake Lining is absolutely guaranteed to give more satisfactory results and to outwear any other lining manufactured. Not affected by heat, oil, water, gasoline or dirt.

Thermoid surely **does** wear—it **has** the friction—it is friction through and through—it will **hold** car, truck or bus until it wears to paper thinness, because we put more **raw material** into Thermoid—we **make** it better—it is one solid, hydraulically compressed mass that gives real service. Thermoid will make good—or we will.

Thermoid Rubber Company
Trenton, N. J.

Makers of Nassau Tires, Garden Hose, Radiator Hose, etc.

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WILMO

Gas Saving Manifolds

The WILMO vaporizes all the remaining gas particles right at the valve openings, therefore makes your car run smooth at all speeds.

SOLD BY ALL DEALERS

Gillette Motors Company

KING C. GILLETTE, President

MISHAWAKA, - - - - INDIANA

Successors to Wilmo & Amplex Co.

Used Electric Drills

Our Guarantee

Have a record of saving more time in proportion to the amount invested than any other piece of machinery.

We guarantee all machines sold by us to give perfect satisfaction or we refund your money.

Write for Prices, Giving the Capacity and Kind of Current Available

St. Louis Portable Tool Co.

1320 CASS AVENUE *ST. LOUIS, MO.*

Add to Garage Profits by Oxy-Acetylene Welding

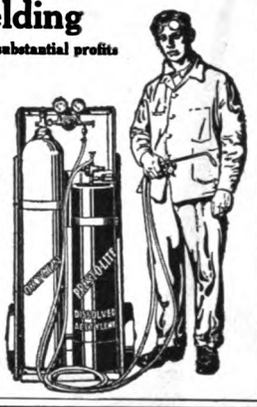
Savings made please your patrons and pay good substantial profits

PREST-O-LITE

Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for $60.00. (Canada $75). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.



The Prest-O-Lite Co., Inc.
The world's Largest Makers of Dissolved Acetylene.

389 Speedway, Indianapolis, Ind. — Canadian Office and Factory, Merritton, Ontario

---

THE

ACME

Ford Steering Controller

PRICE COMPLETE, $3.50

The ACME STEERING CONTROLLER is a simple and substantial Accessory, of practical value to all Ford Car Owners.

By the pressure of two coil springs acting upon the tie rod, the car automatically tends to a straight course, regardless of holes and obstructions, thereby relieving the strain of driving.

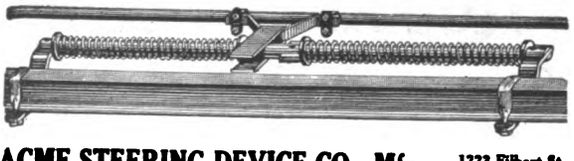
The ACME STEERING CONTROLLER is the only practical steering device for Ford Cars on the market. As proof of this not 1% of those sold to date have been returned. However, the Manufacturers stand ready to take back and make refund to the dealer for any machine returned.

It is easily seen from the description what the device will do, and the Ford Car Owner readily buys because of its simplicity and apparent effectiveness.

Have the device in stock and be in line for sales.

Be the first dealer to introduce the ACME STEERING DEVICE in your territory, and gain this advertising advantage.

Write to your jobber or to us for the discount to dealers.



ACME STEERING DEVICE CO., Mfrs., 1223 Filbert St. Philadelphia, Pa.

FEDERAL

Double-Cable-Base

TIRES

FOR

"Extra Service"

FEDERAL RUBBER MFG. CO.
MILWAUKEE, WIS.

The Manley Garage and Machine Shop Equipment

Designed and built to give economical, dependable service. Time and labor saving equipment that permits automobile repairer to do any size job right and quickly.

Air Compressors ***Portable Cranes***
Arbor Presses ***Screw Presses***

Our complete line is fully described, illustrated and priced in our catalogue. Every jobber, dealer, garage and repair shop man should have a copy. Free at request.

UNITED ENGINE AND MFG. CO.
HANOVER, PA.

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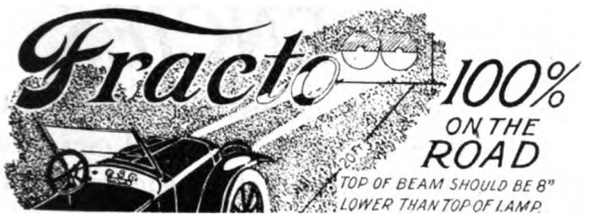

The Best Selling Accessory of the Year. Car Owners Buy at Sight. That Means Profit For You, Mr. Dealer.

FRACTO is a glass shield that is fitted under the lamp of a head light. It weighs two ounces. It is a scientific means for correcting the projection of light rays by directing them upon the reflector, so they will illumine the highway as required by law, and will not dazzle those within their range.

No light is lost, the efficiency of the lamps for night driving is not lessened, and the requirements of motor laws are fully complied with.

THE LIST PRICE IS $2.75 THE PAIR

There is a liberal discount to dealers. Write for agency proposition.

FRACTO SPECIALTY CO.

256 Newbury Street, Boston, Mass.

Resta

Again They Win!

DIXON'S Graphite Automobile LUBRICANTS

Won the sixth annual Indianapolis race and the Chicago Derby Race.

While the cars whirled around the tracks at a dizzy pace Graphite waged a fight against Friction and won. Friction laid low while speed records were being made.

Slowly, but surely, Friction is slyly taking its toll from your car. The only way to protect the bearings and gears from wear is to have them Dixonized.

Send for booklet No. 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

Established 1827

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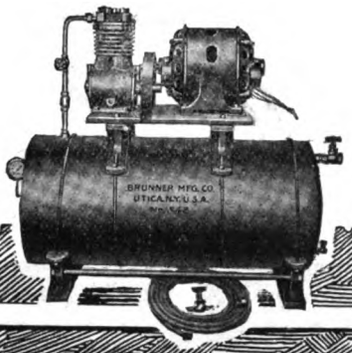

BRUNNER QUALITY AIR COMPRESSORS

The No. 542 Brunner Stationary Motor Driven Air Compressor Outfit

The above illustration shows the new No. 542 Brunner Stationary Assembled Motor Driven Outfit just as it looks when taken from the shipping crate, all that is necessary is to attach the hose line to the outlet valve, connect the motor and throw the switch, and the outfit is ready for use. Hundreds of these outfits are in use in garages, gasoline stations, vulcanizing shops and service stations all over the country, and the new No. 542 Brunner is a demonstrated success in every way. Write for descriptive bulletin and prices.

YOU CANNOT GO WRONG WITH A BRUNNER

because the Brunner has consistently demonstrated its sterling worth IN THOUSANDS OF GARAGES ever since the garage business has been a business, the Brunner line was designed and built for the garage man's use, and the Brunner plant is the largest plant in the world devoted to the EXCLUSIVE manufacture of Garage Air Compressor Equipment, the garage man's interests are not a "side line" consideration in the Brunner plant.

When You Buy a BRUNNER Air Compressor, You Buy Quality and Service As Well.

We will be glad to send you our No. 13 Catalogue and also our Garage Man's Hand Book on Compressed Air, along with the name of the Brunner Jobber covering your town.

Brunner Manufacturing Co.

Main Office and Plant:
Dept. A,
UTICA, - NEW YORK

Cincinnati Branch:
419 First Natl. Bank Bldg.
Cincinnati, Ohio.

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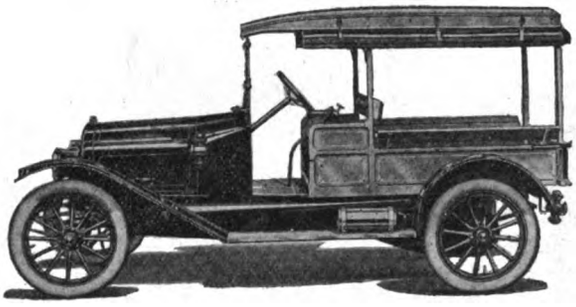
METZ DELIVERY AGENCIES



There is one type of METZ chassis—1000 pounds load capacity. With open express body this Model A, price $500. The same vehicle with electric lighting and starting is Model B, price $550. With covered express body it is Model C, price $525. With electric starting and lighting it is Model D, price $575. With full panel body and electric equipment it is Model E, price $600.

SUCCESSFUL truck dealers sell machines that have been proven by service and are of capacities that will meet the requirements of the largest number of business men in the territory they control.

They cannot afford to deal in machines that are competing in the same market and they have not the time to educate the public to the qualities of vehicles that are not known. The big factors with dealers who are successful are vehicle quality, operating economy, constructional simplicity, low upkeep and maintenance, dependability and the reputation of the manufacturer.

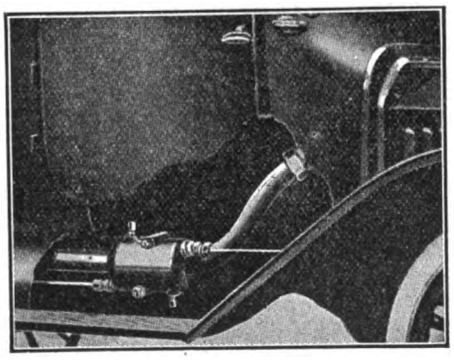
METZ delivery wagons have been proven to have all these qualities and to be unequalled in their class. These machines are in service in all parts of the world and in hundreds of differing services. METZ agents know that these vehicles are the best that the industry has produced. The sales and the service demonstrate these facts.

We desire high grade agency connection where METZ machines are not now represented. The METZ dealers' proposition is big enough for the largest concern, yet it is equally as attractive for the dealer in a small commercial center.

Let us explain this proposition. Write us today.

THE METZ COMPANY

WALTHAM **MASSACHUSETTS**



The Perkins Vaporizer For Ford Cars

GIVES

"One More Mile Per Pint"

OF GASOLINE

or 8 miles more per gallon guaranteed or money refunded

The PERKINS VAPORIZER is built on a scientific principle---that of heating the gasoline before it reaches the carburetor. This is done by a simple device which is quickly clamped to the exhaust pipe as shown in the illustration. The result is a highly combustible mixture which absolutely gives 8 miles more per gallon of gasoline used. The attaching can be done in fifteen or twenty minutes without soldering and without special tools.

Under actual tests with a pint measure used in place of the regular gasoline tank, with and without the PERKINS VAPORIZER, the Vaporizer invariably gives an added mile over the same course---8 miles more to the gallon. The PERKINS VAPORIZER, therefore, pays for itself in quick order.

Price $5.00 Installed

At this nominal cost, no Ford owner can afford to sacrifice the 8 extra miles per gallon which he can have with the PERKINS VAPORIZER. Dealers supplied free with our "One More Mile Per Pint" demonstrating equipment. Write for scale of discounts and exclusive territory offer.

PERKINS APPLIANCE COMPANY, - - SPRINGFIELD, MASS.

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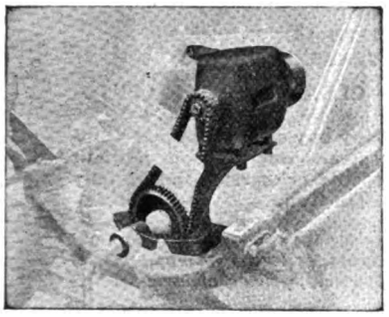
ELECTRIC
ISCO
SYSTEM



Electric Starting and Lighting Systems for FORDS $75

IT SPINS THE MOTOR

There is ALWAYS a start in the Disco, no matter how cold the day. It doesn't merely turn the motor, it SPINS it.

The Disco is a single unit system, simple, light and compact. It operates with a 12-volt current, insuring a start every time. Its patent yoke bracket maintains perfect alignment and eliminates chain breakage. It is easily accessible, and does not interfere with the accessibility of the Ford engine.

Eighteen American cars are using the Disco as regular equipment. We have a proposition to make to owners, dealers, jobbers and manufacturers. Early requests for territory will be given preference.

Write or Wire Today

Disco Electric Starter Corporation
DETROIT, U. S. A.

Harvey
RACINE

Boltless Auto Springs

Are Guaranteed Against All Defects

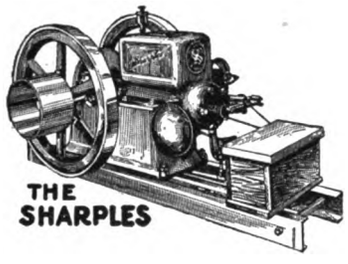
If a Harvey Spring proves defective **at any point** we will replace it. They are unequalled for replacements because they are made without the fault which causes the original spring to break. Strength, flexibility and uniformity are obtained by the use of finest quality steel, formed and tempered on the Harvey Patented Machines.

Harvey Boltless Auto Springs are carried in stock at all the leading jobbing centers. Write for name of your nearest jobber.

HARVEY 1916 SPRING BOOK

is now ready for distribution. It is the most complete spring book ever published and will be found of great assistance in ordering replacements. Gives sizes, weights, measurements and prices of springs for over 600 of the leading makes and models of cars. Mailed free to Dealers, Garagemen and Repairmen. Write for your copy today.

THE HARVEY SPRING CO.
851 17th St. Racine, Wis.



Runs in the Rain

Water has absolutely no effect on our magneto—the Sharples Engine will run perfectly in the pouring rain. Furthermore, the engine makes just as hot a spark when running very, very slowly (for instance when the engine is being started, as when it is running full speed.

The Sharples Engine has Double-Ignition. It has two complete, separate sparking systems, like the best foreign automobiles. **Either** spark will run the engine. **Both** sparks can be used for easy starting. This makes the engine practically trouble-proof.

The New Sharples Double-Ignition
GASOLINE ENGINE

is solidly built for very heavy duty and mounted on non-decaying skids. Gasoline tank is located at lowest point. Gasoline can't possibly drain out. It's pumped up by **suction-feed.** Endorsed by fire underwriters. Speed instantly changed by shifting lever. Doubly inspected and **guaranteed.** Four sizes, 2½ to 9 horse power.

Our liberal contract offers big opportunity to live dealers.

The Sharples Separator Company
Also Sharples Milkers and Sharples Separators
WEST CHESTER, PA.
CHICAGO SAN FRANCISCO PORTLAND TORONTO

10

40

99

LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

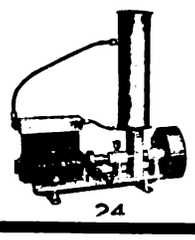
FREE AIR SERVICE CURB STANDS

Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. ***Save Money.***

LIPMAN AIR APPLIANCE CO.
199 Pleasant St., BELOIT, WIS.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50

60

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BAY STATE AUTOKIT

BE PREPARED

The Best Equipment

A Bay State Autokit includes every wrench necessary for work on any pleasure car or truck. The value of these sets is the utility, for any bolt, nut or cap screw can be reached without loss of time or effort.

The right tools mean the saving of time and labor, and, if you are paying for work, an actual saving of money. They are equally advantageous or economical on the road or in the shop or garage.

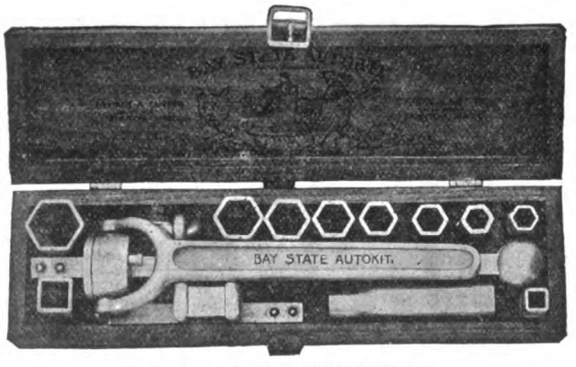
Every Autokit Set will afford thorough satisfaction and it is an extremely practical and economical investment.

All Bay State Autokit wrenches are made of carefully selected steel that will not bend or break. They are sold in three tool combinations, each with a swivelling, reversible ratchet handle and extension shanks. They are supplied in special carrying cases and are guaranteed for life.

Set No. 1, 31 Sockets - - $10.00
(Standard shop equipment)

Set No. 2, 12 Sockets - - 7.50
(Regular standard car equipment)

Set No. 3, 11 Sockets - - 4.00
(For Ford Cars)



BAY STATE AUTOKIT NO. 2.

When your dealer cannot supply you promptly, order direct. Jobbers and Dealers, send for catalogue and special price list.

GEORGE A. CUTTER,
TAUNTON SALES AGENT **MASS.**

KORINE

CARBON REMOVER

CLEANS MOTOR IN ONE HOUR

GUARANTEED NON-INJURIOUS
FOUR YEARS OF SUCCESS

THE SAFE—CLEAN—QUICK WAY

GARAGES:—Why buy a costly burning outfit? Korine cleans out Carbon without DANGER of FIRE or marring finish; only tools needed, one Oil Gun.

One Gallon cleans eight Four-cylinder Motors' five Sixes, four Eights, or two Twelves. ONE HOUR does it. No acid, grit or chemicals.

DEALERS

Quart and Half Gallon sizes big sellers to owners for home and road use. On the market for four years. Used all over the United States.

Concentrate on a Remover that you can stand back of. Korine positively guaranteed to do as claimed. Write us for discounts.

Quart $1.00, Half Gallon $1.75, Gallon $3.00.

NOT A GAMBLE, A SURE THING WITH AN ESTABLISHED REPUTATION

KORINE CARBON REMOVER CO.
136 Federal Street Room 317 Boston, Mass.

Repair Tires—Make Money

Don't continue to plod along and be content with just a storage business with occasional sale of gasoline and oil. The garage that is making money today is the one that is vulcanizing tires with a

SHALER VULCANIZER

You don't have to go out and solicit business. The auto owner when he comes to you for supplies, gasoline, oil, etc., and knows you can repair his tires, will give you the job.

Give your customers this complete service they like, be ready to repair their tires, make money for yourself.

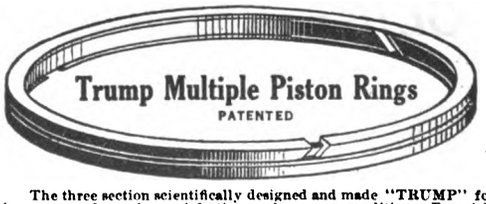
Anybody who can clean or adjust a car can operate a Shaler because of the simplicity of **Shaler Wrapped Tread Method** and **Automatic Heat Control.**

Catalog Free Send at once for the new Shaler catalog, the most complete Vulcanizer Catalog ever published. Get the low discount price for the Shaler garage type pictured here. We will also send you our book "Common Sense about Tire Repairs" for garages only.

C. A. SHALER & CO., 262 Fourth St., Waupun, Wis.
The Largest Manufacturers of Vulcanizers in the World

Power Producers

TRUMP PISTON RINGS



Most Sizes

$1

Per Complete Ring

The three section scientifically designed and made "TRUMP" forms a perfect unit and is guaranteed to give satisfaction under every condition. Especially good for restoring compression to old, worn cylinders. There is a ring for every engine.

Jobbers and dealers send for catalogue and discounts.

TRUMP MANUFACTURING COMPANY
6 Union Street Crown Point, Indiana
J. H. WASSERMAN, Gen. Eastern Representative, 149 Church St., New York, N. Y.

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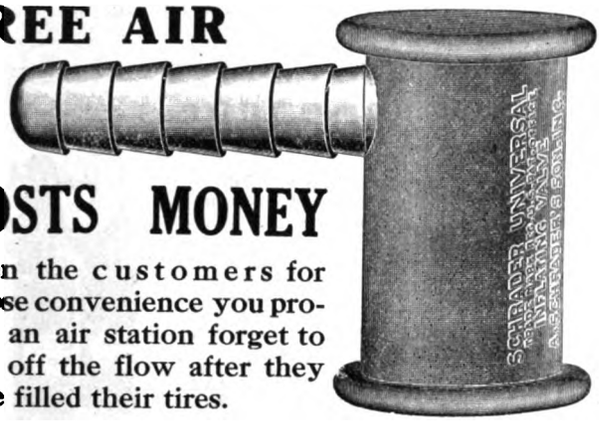
FREE AIR



COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Automatic Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from 1-4 in. to 5-8 in.

PRICE ONE DOLLAR

Manufactured by

A. SCHRADER'S SON, Inc.

800 Atlantic Avenue, Brooklyn, N. Y.

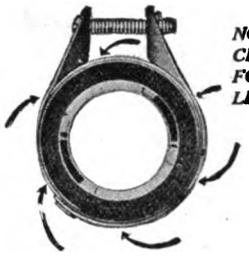
Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

THE OLD WAY

Note: Escape of Air, Water, Steam, Etc.

THE IDEAL HOSE CLAMP

THE NEW WAY



NO CHANCE FOR LEAKAGE

The Only Clamp That Closes Perfectly Round Over a Hose

A FEW SUPERIOR POINTS OF THE IDEAL CLAMPS ARE:—

They will not *Buckle* or cut the hose.

They can be slipped over a pipe, no matter in what position the pipe may be.

They will always form back to the original shape by simply tightening the screw.

SAMPLES AND DISCOUNTS

Manufactured by

IDEAL CLAMP MFG. CO.

202 Bradford St., Brooklyn.

Distributed to the Trade by

J. H. FAW, Inc.

41 Warren St., New York City. Branch: Atlanta, Ga.

Kimbrough's Never Leak,

Is a liquid which when injected into your automobile or bicycle tire, will heal punctures automatically and instantaneously. This is not a filler. Guaranteed not to injure rubber, will add to the life of your tire—does not interfere with air cushion—occupies 5 per cent of the air space—does not gum or solidify—removes cause of 75 per cent. of blowouts.

Is not sticky—will not freeze—does not hinder vulcanizing—lasts indefinitely—costs but little—one gallon can is sufficient for ordinary car.

This is put in the inner tube—does not interfere with putting in air. This will save your money—save your time—save your temper and make your pleasure trips enjoyable.

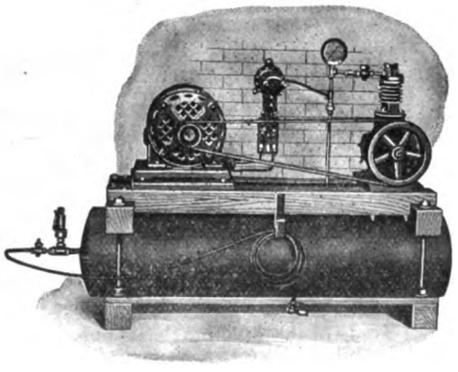
Shipped anywhere in the United States charges prepaid, upon receipt of $5.00 per gallon can.

THE DENVER FORD STARTER COMPANY

Suite 327 Century Bldg. Denver, Colo.

GARDNER

STATIONARY FREE AIR UNIT



FOR

SERVICE ECONOMY DEPENDABILITY

A Gardner Outfit of this type installed in ***your*** garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY

126 Williamson St., Quincy, Ill.

Singer Bldg New York City | Fisher Bldg Chicago | 5 First St. San Francisco

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ELIMINATE THE BUMPS. CUT DOWN TIRE EXPENSE. DOUBLE THE PLEASURE OF MOTORING.

REDUCE MAINTENANCE COST AND DEPRECIATION.

ALL THIS CAN BE DONE WITH

NEW ERA TWIN ELIPTIC SHOCK ABSORBERS

ALWAYS HANG STRAIGHT DOWN

Handsomely Finished **POPULAR PRICED---$12.00-$15.00** Guaranteed Permanent

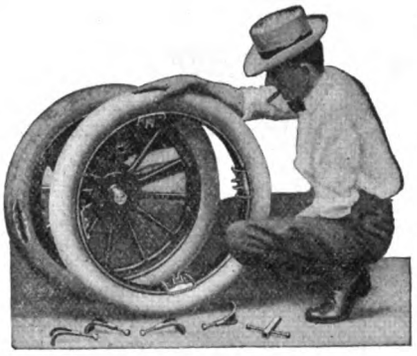
There's a New Era Twin Eliptic for Your Car—Order by This Diagram:—

Model	No. 1	No. 2	No. 3	No. 4
Weight of Car	$12.00 to 2300	$12.50 from 2300 to 3000	$13.50 from 3000 to 3800	$15.00 from 3800 and up
Width of Spring	1¾" Special 2" & 2¼"	2" Special 1¾" & 2¼'	2" Special 1¾" & 2¼	2" Special 1¾" & 2¼"

Your dealer will get a set for you on a thirty day trial---if you ask him. Why be without a set another day?

NEW ERA SPRING AND SPECIALTY CO., 877 WOODWARD AVE. DETROIT, MICH.

If your dealer or jobber won't supply you, order from us.



METHOD OF MOUNTING

TWIN-RIM

Patented Feb., 1916

A DEMOUNTABLE RIM FOR

FORD CARS

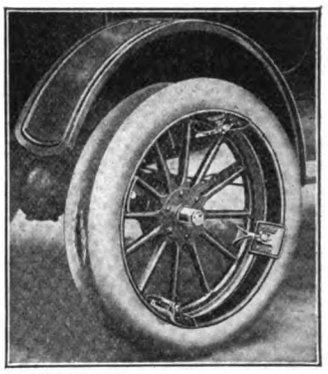
And All Other 30"x3½" or 30"x3" Clincher Rims

Thousands of Ford Car owners have equipped their cars with this invention and the universal verdict is: "They would not be without the TWIN-RIM."

YOU DON'T HAVE TO REMOVE DAMAGED TIRES

TWIN-RIM $5.00

DEALERS AND AGENTS WANTED



MOUNTED READY TO RUN

TWIN RIM CO., Inc., - - - - - - 103 Massachusetts Avenue, Boston, Mass.

G-12

BOW-SER SER-VICE

To think of one suggests the other

Garagemen

and other Retailers of Gasolene

Car owners for blocks around can be attracted to your place of business both day and night by the tall, brilliantly-colored electric-lighted

BOWSER Chief Sentry

Trade of this kind purchases not only gasolene, but oil, accessories and supplies. Put one of these silent salesmen to work in front of your garage.

The Chief Sentry pumps quickly and accurately 5 gallons of filtered gasolene at one stroke of the plunger. It pumps any intermediate gallon, half-gallon or quart. The indicator shows *exactly* how much gasolene has been drawn.

It is *double-locked*—pump being locked during business hours, cover locked when closed. Absolutely weather-proof. A handsome advertisement. For full information send for Bulletin No. 102.

We make storage tanks in all sizes for under or above ground and portable use with inside or outdoor pumps suitable for handling volatile or non-volatile fluids of any kind.

S. F. BOWSER & CO., Inc.

FORT WAYNE, INDIANA, U. S. A.

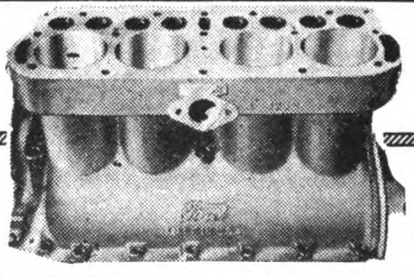
Automobile Mailing Lists 1916

28,108	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
8,123	Ford Dealers, price $17.50, or $3 per M by states.
285	Ford Dealers, Canada, $1.50.
28,463	Auto Garages, price $40, or $2.50 per M by states.
29,306	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
45,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
940	Auto Supply Jobbers, price $4 for the list.
4,093	Auto Tire Dealers, price $3 per M.
2,404,150	Auto Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.
643,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

Write for particulars of any list you want.

A. F. WILLIAMS, Manager,

Phone Franklin 1182. 164 West Adams St., CHICAGO



CYLINDER BORING

AUTO, MOTORCYCLE, STATIONARY AND TRACTOR ENGINE CYLINDERS REBORED

Write for prices *Special offer to dealers*

Motorcycle Accessories Company

ST. PAUL, MINN.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Solder Without Heat

YOU CAN DO IT WITH

OLD ROMAN SOLDER

And effect a permanent repair in a few minutes. You can repair a cracked cylinder—leaky radiator—plug a hole in a gasoline or oil tank—close a leak in a carburetor or pump connection—correct a short circuit in the magneto or wiring of electrical equipment—in a word, there are a hundred uses for Old Roman Solder in automobile service.

Old Roman Solder is quickly salable. We supply an attractive display box with every order of two dozen. It helps sales—Your margin of profit is liberal.

25c A TUBE

Write now for Dealer Proposition

Sole Manufacturing Co., 148 Chambers Street New York City

THE "JIFFY"

Clothes Protecting Garment

Absolutely dust-proof. Quickly put on—as quickly removed.

Every autoist should have one. A delight and a necessity on every tour.

Made in Khaki or blue. Waterproofed when so ordered. U. S. Army standard.

Prices $1.50 to $3.50.

DEALERS

Safety First. Something Profitable.
Liberal discounts to the trade.
Write for our proposition.

M. & N. Mfg. Co.

684 Broadway, New York City

Bunting Bearing Bronze IN Cored Bars

Bunting Bearing Metal is standard today with both Manufacturer and Repairman.

Is for sale by most any Jobber or can be purchased direct from us.

STOCK SIZES

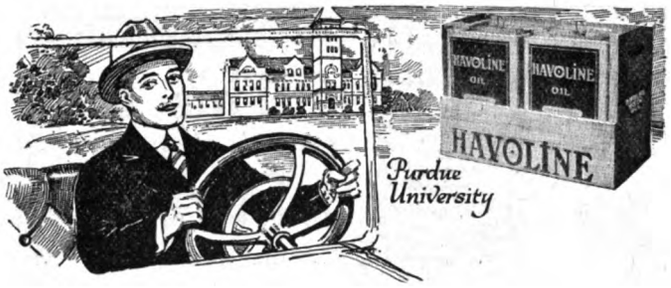
PIECE NO.	Outside Diameter	Inside Diameter	Length	Approximate weight
A	1	⅛	12	2
B	1¼	⅛	12	3½
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

The Bunting Brass & Bronze Co.
727 Spencer Street Toledo, Ohio

SUBSCRIBE FOR

THE AUTOMOBILE JOURNAL

24 Issues $1.50 the Year



Science Awards Havoline "First In Everything"

THE verdict is rendered! Scientific authority confirms Havoline's pre-eminence. In a competitive test with the World's leading lubricants, made by Purdue University, Havoline demonstrated its superiority. It established new standards of quality and efficiency. In every point by which the value of lubricants is measured, Havoline outrivaled its competitors. It led in wearing qualities, heat resisting properties, minimum frictional loss and uniform qualities in all temperatures.

"Cash in" on Havoline's victory. There is only *one* World's standard in anything. In lubricants, it's Havoline—that's conceded!

Write now for our dealer proposition. It's new and attractive. Our new booklet "*Havoline Oil Goes To College*" sent on request.

The name Havoline over your door lines you up with the World's standard lubricant. It links you up with the widely advertised Havoline quality. Come in with us now. Share in our triumph. We'll create the demand. You fill it and take in the profits.

INDIAN REFINING COMPANY
Dept M NEW YORK

A Box of Bits at a Bargain Price

$3.40

A full set of 13 of our popular Lakeside Solid Center Stem Auger Bits. Double Cutter, two spurs standard double thread screw. Bore fast and true.

Finest steel correctly shaped, well tempered, finely polished. One each 1-4, 5-16, 3-8, 7-16, 1-2, 9-16, 5-8, 11-16, 3-4, 13-16, 7-8, 15-16, 1 inch in handy, upright wood box hinged cover, nicely varnished. Shipping weight 5 1-4 lbs.

One of the many bargains from our big stock of tools. May we send you our Tool Book? It's FREE, Buy tools at wholesale prices.

Montgomery Ward & Co

Dept A H 539
Chicago New York
Kansas City
Ft. Worth Portland, Ore.
Order from most convenient house.

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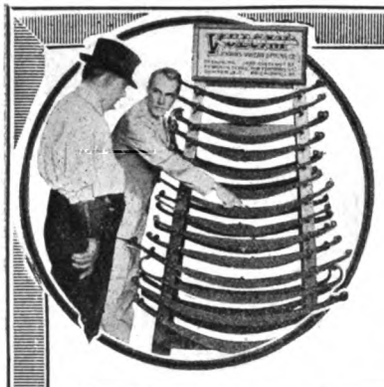


This Is the Spring

that we swear by. We have handled others, but we highly recommend the

VULCAN QUALITY

"We are certain of its *Quality;* we appreciate the character of *Service* given us by its manufacturers—always prompt, courteous and helpful; we realize the fair *Price* charged for it.

"We should be glad to see you purchase it for we like to see our customers satisfied."

Thus speaks the Dealer in this picture, and we back him up in every word.

We constantly carry in stock types and sizes suitable for 90% of all styles of American cars. We start you with a complete line and give you this attractive rack to display them.

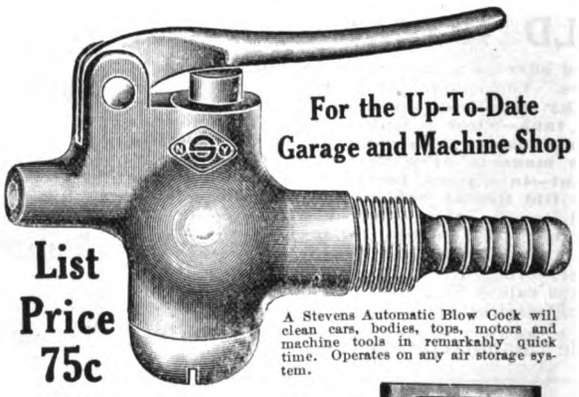
Write at once for our liberal offer.

JENKINS VULCAN SPRING CO.,

1402 Chestnut St., St. Louis, Mo. 708 Commerce St., Fort Worth, Tex.
29 Caldwell St., Sumter, S. C.

STEVENS & CO. NEW YORK

THE MODERN CLEANER



For the Up-To-Date Garage and Machine Shop

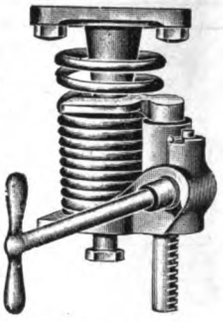
List Price 75c

A Stevens Automatic Blow Cock will clean cars, bodies, tops, motors and machine tools in remarkably quick time. Operates on any air storage system.

The Bryant VALVE SPRING REMOVER

Easy to operate in inaccessible positions

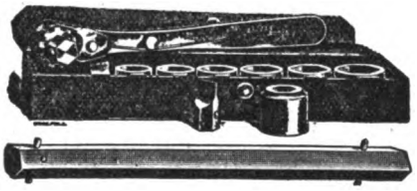
This universal ratchet tool can be used in practically every make of motor, including the latest models with overhead valves. Also used as clamp to hold springs compressed during replacement.



List Price with Key $1.50
Ask your jobber for discounts

STEVENS & CO., 375 B'way, New York

MANUFACTURERS OF Automobile Parts & Accessories



DON'T USE A COLD CHISEL

USE THE LANE UNIQUE RATCHET WRENCH

FOR CLOSE AND DIFFICULT WORK

IT TURNS NUTS VERY CLOSE TO THE WALL.

is easily and quickly reversed, sockets will not break or split and fits three standards and automobile nuts.

MADE FOR HEAVY SERVICE

Wrench is machine made. Sockets are turned from steel bars, cold broached and case hardened. Fully warranted. Every repairman should have a UNIQUE RATCHET WRENCH SET.

SPECIAL SETS FOR FORD CARS

Dealers, Jobbers and Garagemen, Write for Trade Discounts.

STANDARD SET Contains:
1 Handle 7 inches in length.
2 Screw driver bits.
7 Sockets to fit semi-finished hex. nuts as follows:
U. S. Standards from 1-4 in. to 1-2 in.
A. L. A. M. Standards from 5-16 in. to 11-16 in.
Cap screw heads from 5-16 in. to 5-8 in.
Price in leather case **$2.50.**

THE FORD SET Contains:
1 Handle 7 inches in length.
2 Screw-driver bits.
1 Extension bar 7 in. in length.
SIX SOCKETS to fit all nuts and bolt heads on Ford car, including the cylinder head.
Price in leather case **$3.00.**
Sold by dealers everywhere.

WILL B. LANE, Manufacturer, 180 N. Dearborn Street, Chicago, Ill.

You can make anywhere from $1500 to $3000 a year above expenses. Your investment to start is small, returns are quick and income cash. Profits are large on every job. The Tire repair business is growing every year. Every city and town offers opportunity for you. Buy only an

AKRON-WILLIAMS TIRE REPAIR EQUIPMENT

The better your equipment, the better your work and the greater your volume of business. Start right. Use equipment which is

Endorsed by 30 Leading Tire Manufacturers We are making an unusual offer to everybody who buys our equipment. You can become a tire repair expert by our plan.

SEND FOR OUR 30 DAY SCHOOL PLAN

You start right. No experimenting. No failures. You become a practical, first-class repair man.

SEND FOR CATALOG NO. 12

WILLIAMS FOUNDRY & MACHINE COMPANY
ASH STREET, AKRON, OHIO

WATERHOUSE & LESTER CO.
Exclusive California Distributors, San Francisco and Los Angeles

The Automobile Journal

A magazine that is read by more than 20,000 car owners every issue.

It Will Interest You—

Send for sample copy. Times Bldg., Pawt., R. I.

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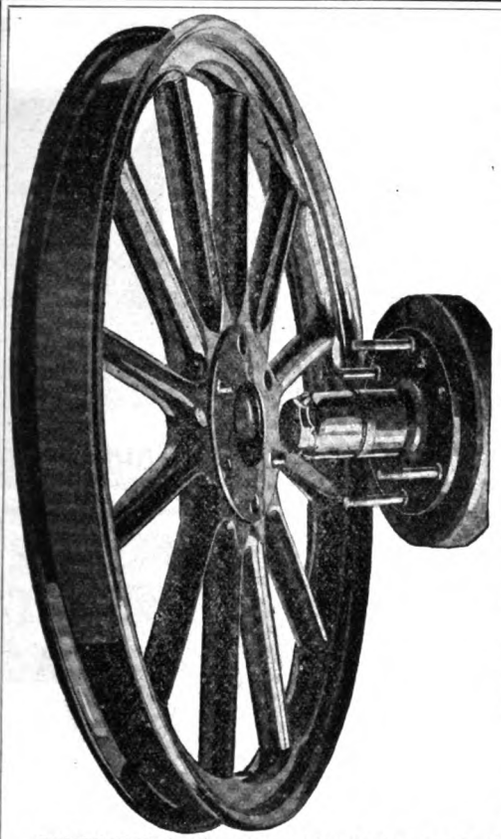


Make Ford Wheels Demountable

Change the wheel instead of the tire. Carry a spare wheel with a tire already mounted. The change can be made in two minutes.

Standard Demountable Wheel Set

Equips the regular Ford car wheels so they are demountable and interchangeable, and gives one spare wheel on which an extra tire is carried inflated. It consists of four special steel plates that are attached to the insides of the wheels on the car and the necessary special bolts, and extra wheel complete. No machine work whatever and no tools needed but a wrench to install the plates. The change can be made in an hour.

The driver makes the tire change by jacking the car, loosening four bolts, removing the wheel, putting on the spare wheel, tightening the nuts and strapping on the wheel removed. Contrast this with the change of any demountable rim.

LIST PRICE $12

JOBBERS AND DEALERS

Write or wire for special proposition. This is the newest and fastest selling Ford car equipment in the market. It will be a leading line, sells the year through, and will bring big profits.

STANDARD AUTO ACCESSORY CO.
Leipsic Ohio

DISTRIBUTORS:—The Automobile Supply Co., 1335 Michigan Blvd., Chicago, Ill. Chanslor & Lyon Co., San Francisco, Cal. Interstate Electric Co., New Orleans, La. The Manufacturers Supplies Co., Cherry and Juniper Sts., Philadelphia, Pa. Western Motor Supply Co., Minneapolis, Minn. Boice-Perrine Co., 64 Brookline Ave., Boston, Mass. A. J. Picard & Co., 1720 Broadway, New York, N. Y. Joseph Strauss & Son, Buffalo, N. Y. The Automobile Sundries Co., 18 Broadway, N. Y., Exporters. The Canadian Fairbanks-Morse Co., Montreal, Canada.

SELL SULLIVAN TRUCKS

One of the few staple and practical trucks on the market.

Our selling policy and proposition is the most liberal ever offered to the trade.

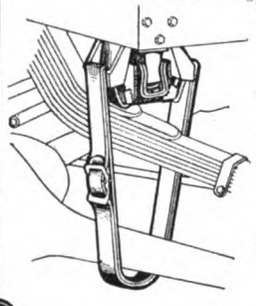
One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
Rochester, New York

YANKEE

SHOCK ABSORBER
BEST IN THE WORLD



No. 20 FOR FORD CARS

The one practical shock absorber and Recoil Check. The principle is that of a steel wedge working between leaf springs.

NO BUMPS. NO SHOCKS.
Adjustable to all loads. Easy to attach. A wrench is the only tool necessary.

Set of Four $14
Write for special trade discount

SIMPLEX AUTO SPECIALTY CO.
731 Woodward Ave., Detroit, Mich.

Yankee Shock Absorber No. 20 for Large Cars, Set of Four $20

THIS AMBU BATTERY BOOK— GET IT!

An authoritative work on upkeep, care and repair of electric storage batteries—

"Starting and Lighting Batteries"
NOW READY

Every repair, garage and service station man needs it.

Send today---$1.00 for Your Copy

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S. J. R.

BOULEVARD ROADSTER

$995

Four-Cylinder Motor,
3 1-8 x 4 1-2, en bloc
Cantilever Springs
110" Wheelbase
Houk Wire Wheels

SJR

Dealers: Write for Our Proposition.

S. J. R. Motor Co.
126 Massachusetts Avenue - - BOSTON, MASS

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Roller Bearings
SERVICE BRANCHES
ATLANTA-DETROIT-BOSTON-SAN FRANCISCO-NEW YORK-LOS ANGELES-CHICAGO-MINNEAPOLIS-LONDON, ENG.

DEALERS—This Talk is Just for You

Send for a sample order. We make one price to all—the lowest.

Circulars and discount sheets on request.

You can save dollars and add to your prosperity by selling the Martin line of tire covers, water buckets, inner tube cases and similar goods.

These are made of heavy imitation leather. (Not of cheap oil cloth). They are the kind and quality that will please and satisfy the customer.

These values, for the price, are phenomenal.

For instance we make a price to you of 85 cents for our style D 34 by 4 tire cover for special hangers and wire wheels.

Our price to you for inner tube cases for single tubes is $8 per 100. They are of good quality water proof materials.

Prices and quality are what interest you. They show the live dealer where to buy to earn the big and easy profits.

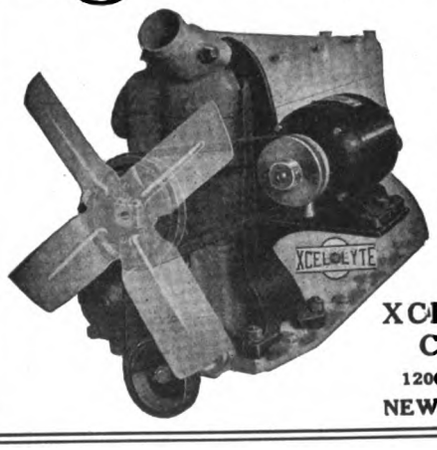
We will quote you prices as low as those mentioned on our complete line. If you buy from us it will make 1916 a prosperous year for you.

Orders are not accepted from owners. These prices are exclusively for the trade.

THE MARTIN MFG. CO., Lancaster, Ohio

XCEL-O-LYTE

LIGHTING SYSTEMS FORD, OVERLAND



An Exclusive Territory Proposition Open to Dealers.

Ball bearing dynamo. 6-80 storage battery, double-bulb headlamps, tail lamps, dash lamps, automatic cut-out, switch, bracket, driving transmission included in this high grade equipment.

Write for Agency Terms.

XCEL-O-LYTE COMPANY
1200 Xcelo Building
NEWTON, IOWA

HESS-BRIGHT
BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
The HESS-BRIGHT MANUFACTURING COMPANY
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THE AUTOMOBILE JOURNAL

Is the oldest Automobile magazine published in America devoted wholly to owners of pleasure cars.

A quality magazine with prestige and circulation that brings results to advertisers.

TIMES BUILDING - - - - PAWTUCKET, R. I.

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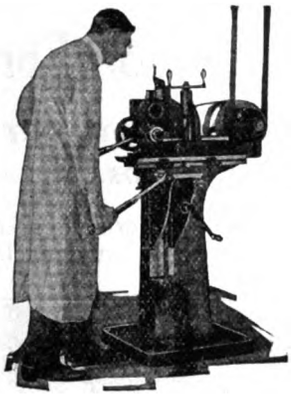


Here's What You Need in Your Garage or Repair Shop

because it is an all around machine and has features that make it a necessary tool for your line of work.

The "Whitney" Hand Miller

will cut gears, cams, sprockets, do key seating, profiling, slotting, slabbing, straddle milling, and hundreds of other operations.

Our Universal Milling Attachment permits the use of end mills and makes the machine desirable for drilling and all classes of milling, where small cutters and high speeds are necessary.

Simply Drop a Postal for Catalog No. 3.

The Whitney Mfg. Co., Hartford, Conn.

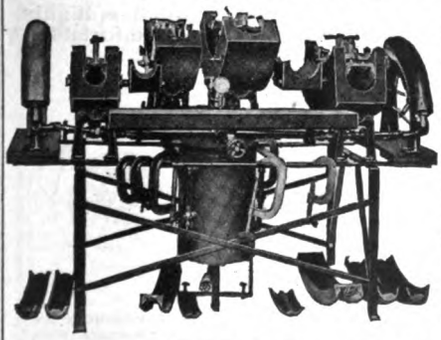
CHAINS KEYS HAND MILLING MACHINES

NEW DEPARTURE BALL BEARINGS

American Made FOR American Trade QUALITY FIRST

THE NEW DEPARTURE MANUFACTURING CO. CONRAD PATENTS LICENSES BRISTOL, CONN., U. S. A.

Big Money Double Treading



Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch inclusive.

VANDERPOOL CO., Springfield, Ohio

and 1044 S. Main Street, Los Angeles, Cal.

"NORMA"

"NORMA" BALL BEARINGS

(PATENTED)

Reputations are slow in the building—but easily and quickly demolished. The buying public is critical and impulsive—it forms its opinions after a failure before giving opportunity for explanation. The one outstanding fact is the failure itself—and it leaves an impression that a hundred examples of success cannot wipe out.

Knowing this, the makers of ignition apparatus, lighting generators and starting motors who value their reputation as established by the performance of their machines, protect themselves against bearing failures by standardizing on "NORMA" Ball Bearings.

Are You "NORMA"-Wise?

THE NORMA COMPANY OF AMERICA

1790 BROADWAY —— NEW YORK

BALL, ROLLER, THRUST AND COMBINATION BEARINGS

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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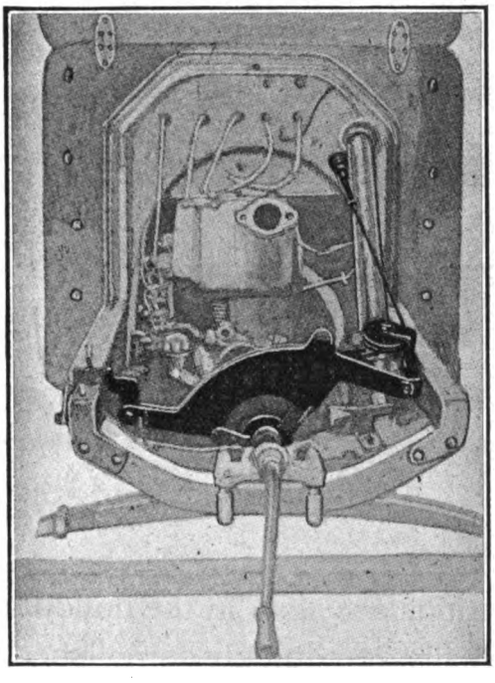
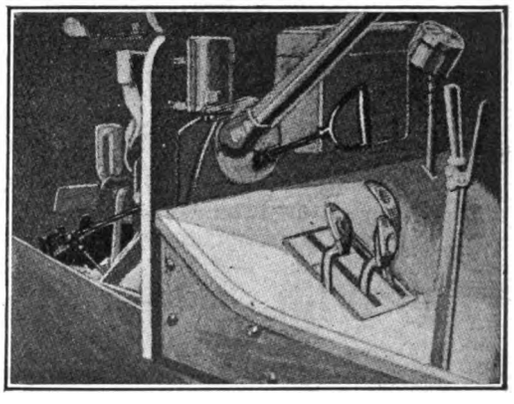


The Denver Starter For Ford Cars

Is Just the thing to put on your Ford and Metz autos.

Entirely concealed—guaranteed to turn your engine over—light, only weighs eight pounds—simple, any mechanic can put it on—positive in its action. Does not disfigure your car in any way — neither the crank or any other working part of your machine is interfered with—no ratchets—no cogs — no friction — automatically releases on back fire — no danger. This starter complete delivered, charges prepaid, anywhere in the United States, for only $7.50.



THE DENVER FORD STARTER CO.
327 Century Building, Denver, Colo.

Gentlemen:
Please find inclosed $7.50 for which please send me one of your starters for Ford or Metz Cars, charges to be prepaid by you, with full instructions for putting same on.

Name.....

Street Number.....

City or Town..... State.....

Durable! Efficient! Economical!
Try it! You'll Like It!

The Denver Ford Starter Co.

327 Century Bldg., Denver, Colo.

Time Savers
For Charging Storage Batteries

HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.
Made of steel—lead plated—may be used over and over again.
No. 13-A—¾" spread of jaws.
No. 16-A—1½" spread of jaws.
Your money back without quibble if not entirely satisfied.
Single Lots, Each 15c Lots of 10, Each 12 1-2c Lots of 100, Each 10c

R. S. MUELLER & CO., 431 High Ave., S. E., Cleveland, Ohio.

Century
Automobile Cigar Lighter, Complete $1.00 Each, F. O. B. Indianapolis

Mabey's Trouble Lamp Complete with Lamp $1.25 F. O. B. Indianapolis

Mabey's Electric Patching Tool for Vulcanizing cuts and holes in tires. Works on your lighting circuit. Price complete $2.75, F. O. B. Indianapolis.

Mabey's Electric & Mfg. Company
1020 Central Ave., Indianapolis, Ind.

STANDARD
FOR CHEVROLET "490"

Built on the tried and true centrifugal system which does not alter. Hand steady as a rock at all speeds.

Handsome nickel flush mounting makes it an ornament to your car.

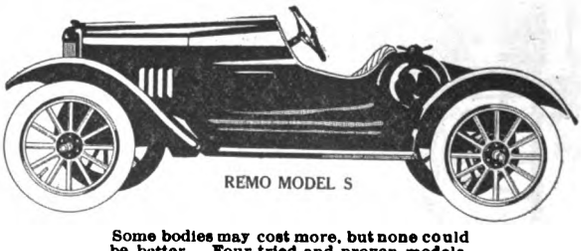
Guaranteed country-wide service assures your lasting satisfaction.

$15 *DEALERS write for proposition.*

STANDARD THERMOMETER CO.
65 Shirley Street Boston, Mass.

Remo Bodies for Ford Chassis

The REMO raceabout bodies are distinctive, highly attractive, finely made, give class and are comfortable.



Some bodies may cost more, but none could be better. Four tried and proven models.

DEALERS: Investigate the Remo line. Prices and discounts will interest you. Fast sellers. Just what the Ford owners want and are buying.

Send Today for Latest Catalogue and Discount Sheets

AUTO REMODELLING CO., 1509 So. Michigan Ave. CHICAGO, ILL.

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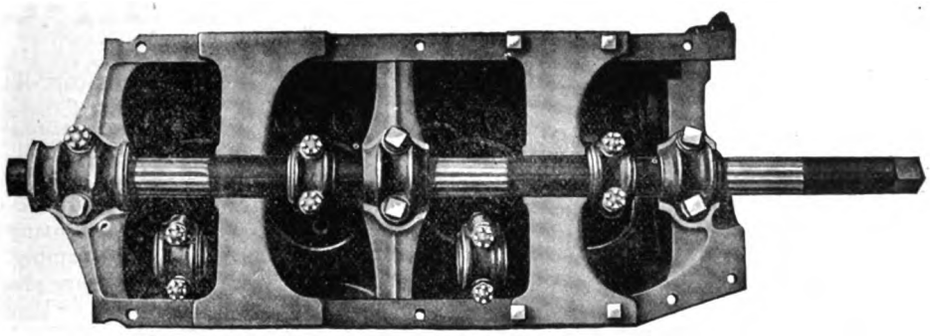
The *BEST* Tools Are None Too Good for the Particular Mechanic. Especially When That *BEST* Is Obtainable At Reasonable Prices.



FORD CONNECTING ROD AND MAIN BEARING REAMER
(Two Guides Supplied With Each Tool.)

If perfect alignment means anything to you then you want this tool.

No Scraping
No Guesswork
A Fussy Job Made Easy.

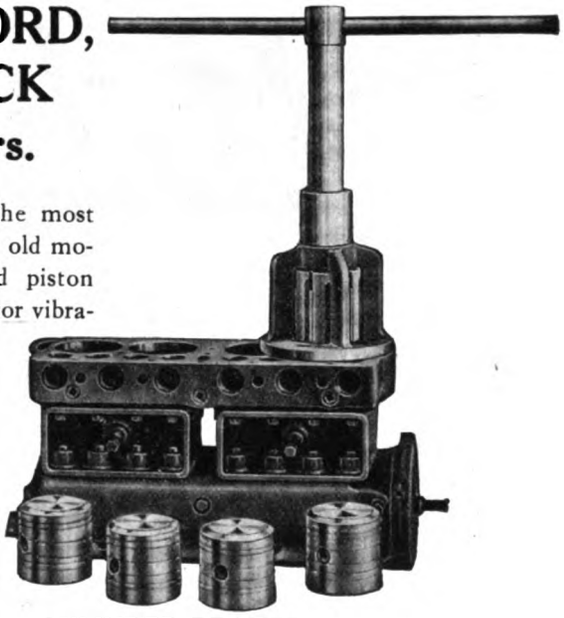
Increase the profit by reducing the time required.

PISTONS
FOR THE
FORD and
OTHER MAKES

For reboring FORD, METZ,—BUICK M 10 cylinders.

A properly fitted piston is the most important repair to be given an old motor; it stops all knocking and piston play; eliminates the most of motor vibration thus prolonging the life of the car and adding to the comfort of passengers.

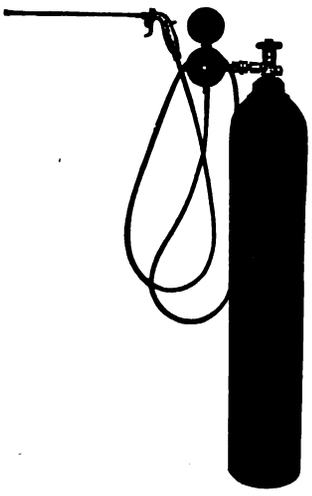
More power is given to the motor; all fouling of spark plugs and carbonizing is stopped; considerable savings in oil and gasoline is effected, all score marks taken out and cylinder finished as smooth as a gun bore.



CYLINDER REAMER and JIG

WELDING

CARBON REMOVING



Style A Carbon Removing Outfit

PREPAREDNESS—EFFICIENCY

When equipped with a DYER welding, carbon removing, steel cutting, lead burning or brazing outfit, you are prepared for straightening that frame, crankshaft or axle, welding broken parts, building up worn parts, tightening loose rivets, soldering or burning carbon from cylinders in a most efficient and economical manner.

We Carry a Large Stock. Get Our Prices.

Catalogue on application.

THE G. H. DYER CO., Cambridge, Mass.

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Announcement to Ford Owners!

Real driving economy at last, dealers making big clean-up!

My company guarantees ***to add 15% to 50% to the gasoline mileage of any Ford.*** **Guarantees that any Ford with the Myle-Mayker will throttle down to less than 4 miles per hour on "high"—practically be free from carbon deposits—will run smoother, have cooler engine and be more silent, more flexible and *easier to start*—will pull better on high gear.**

Myle Mayker Co. Eugene F. Kline
PRESIDENT

GREENEBAUM SONS BANK & TRUST CO.
(Capital and Surplus $2,000,000)
Chicago, Aug. 17, 1916
Eugene F. Kline has been known favorably to the officers of this bank for many years, and is considered amply able to make good on every promise to customers.
GREENEBAUM SONS BANK & TRUST CO.

The MyleMayker

Copyright 1916, Myle-Mayker Company

Add the Myle-Mayker to any stock Ford carburetor and you add 15% to 50% to gasoline mileage. **The universal impression that the Ford car is the most economical of cars is a mistaken impression.** As you well know, other cars weighing 500 to 1000 pounds more, are delivering higher gasoline mileage. It's because the carburetor of the Ford is adjusted, normally, for a very rich mixture.

This is **necessary** for starting and running at the low speeds, but results in **too much gasoline burned at the higher speeds.**

Cut down gasoline one-half turn —save practically 50%

The Myle-Mayker gives to the Ford carburetor the efficiency of a $25 instrument. Makes the Ford car the economical car it is supposed to be. **Automatically the Myle-Mayker regulates the quantity of air admitted.**

In starting and at slow speeds, just a little air is admitted, and the mixture is rich—as the engine picks up speed, more air is admitted, and less gasoline used.

Easier cranking—less noise—4 miles or less on "high"

You always get a rich mixture for starting, when the Myle-Mayker is on the job. You crank easily at all times. The usual noise is to a large extent quieted. Your motor becomes smooth, quiet and wonderfully flexible. **In one test with an eight-cylinder car** the Ford did everything the other car did except in throttling down. The eight got down to 2 miles—the Ford to 2½.

No hole to drill in manifold— no change of any part

To install the Myle-Mayker doesn't require laying up the car. It's put on with a screw driver in two minutes and taken off just as quickly, and without damage of any kind. No mark left to show it was ever attached. Can be put on one day, to test out the device, and taken off the next for comparison of results.

There is nothing about the Myle-Mayker to wear out, or fail. The position of the car does not effect it, neither does cold, dampness, dryness nor any other condition. It cannot get out of adjustment nor fail to work. It is the only device claiming to effect a gasoline saving, of which this can truthfully be said.

Read big announcement in double page advertisement in September "Motor"

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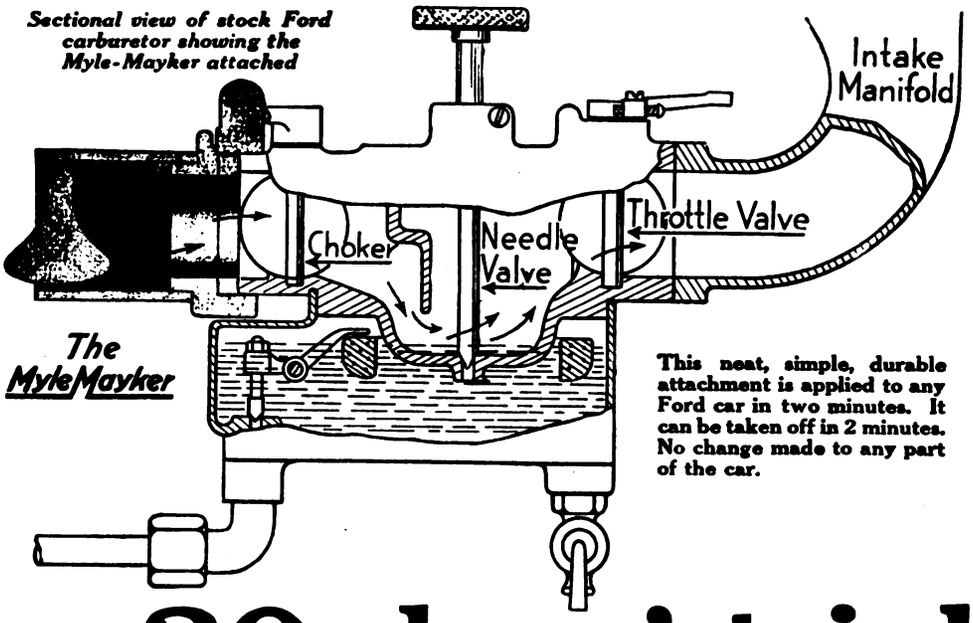
$5

Saves $1.50 to $5.00 every month on your Gasoline Bill

Sectional view of stock Ford carburetor showing the Myle-Mayker attached



The MyleMayker

This neat, simple, durable attachment is applied to any Ford car in two minutes. It can be taken off in 2 minutes. No change made to any part of the car.

Sold on 30 days' trial

Dealers having big repeat business—thousands sold—not one returned

The MyleMayker

Copyright 1916, Myle-Mayker Company

The Myle-Mayker is its **own best salesman.** That's why we make our guarantee so strong, and why we make it so easy for everybody to try it. To prove to your own satisfaction that the Myle-Mayker will do even more than we claim for it, and that your opportunity to make money on this instrument is even more attractive than it appears as you read this advertisement, do this:

Order a sample Myle-Mayker on your business stationery, so that we will know you are a garageman or accessory dealer, (the retail price is $5). As a dealer you get a liberal discount. We will send you a Myle-Mayker, prepaid, together with our price list.

Test it thoroughly in accordance with our instructions or any other way you like.

Make the Myle-Mayker prove to you that it will add 3 to 10 miles per gallon to a Ford car's gasoline mileage—that it will make the car easier to start, smoother running, able to be throttled down to less than 4 miles per hour. If you're not convinced it's a big winner, return it at our expense within 10 days.

If you agree with us that it is a big money-maker for you, send us your order for a dozen and we will send you the other eleven on our regular terms, as shown by price-list.

Don't wait, but test out and prove the Myle-Mayker, and start making money with it

Your chance to make a lot of money

Fill out this coupon, pin to a sheet of your business stationery. Mail today.

State agents—district agents—live dealers wanted everywhere!

Here's the biggest thing ever invented in the way of a gasoline saver. To test it doesn't require mutilating the car. Doesn't require the laying up of the car. Doesn't call for an expensive installation. It is put on by anybody in two minutes and taken off as quickly. Talk about easy sales! This device is the limit! Dealers order second and third lots inside of three weeks or a month.

Just think of it—the Myle-Maker not only wonderfully increases the efficiency of the Ford, but **saves its own cost in a month or two!** It's backed by our **guarantee to do every thing we claim for it.** Here's the biggest chance to make a lot of money that has come your way in many a day. You'll be assisted in your sales by powerful national advertising and live dealer co-operation. If you want territory, jump on the first train and come to see us.

Write, phone or wire for representative to call.

MyleMayker Company

Department 8J 323 E. 33d Street
CHICAGO, ILLINOIS

Do this now!

The Myle-Mayker Co.,
323 E. 33d St.,
Chicago, Ill.

Send one of your Myle-Maykers, prepaid, with the understanding that you guarantee it, when attached to stock Ford carburetor as per instructions, to save gasoline, make the engine easier to start, smoother running, freer from carbon. If not satisfied, I can return at the end of ten days at your expense, otherwise I agree to pay for it at regular price, less your usual trade discount. I am a dealer, and am ordering this Myle-Mayker to test it out with the idea of ordering a trial dozen or more, if it proves satisfactory. Send prices and full information.

Name of dealer .....

.....

Address in full .....

.....

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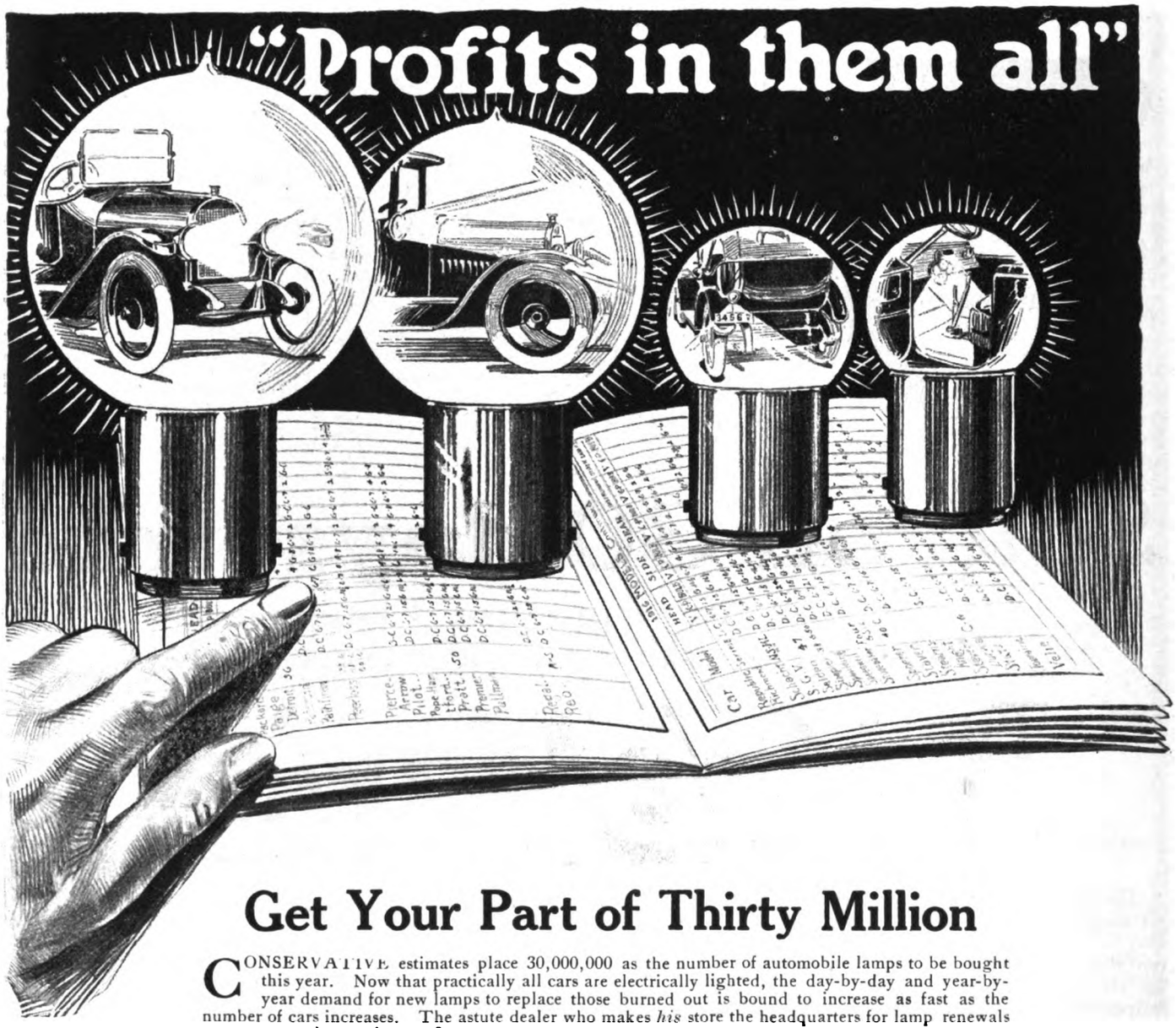

Get Your Part of Thirty Million

CONSERVATIVE estimates place 30,000,000 as the number of automobile lamps to be bought this year. Now that practically all cars are electrically lighted, the day-by-day and year-by-year demand for new lamps to replace those burned out is bound to increase as fast as the number of cars increases. The astute dealer who makes *his* store the headquarters for lamp renewals reaps constantly growing profits.

Small Stock Morever the initial investment is so small that anyone can put on his counter the lamp assortment with enough selected sizes and types of lamps to supply all needs. Reordering to keep this stock complete is so simple as to be almost automatic.

Easy Terms With our little booklet as a guide any clerk can instantly supply the right lamp for any car—the name and year of the car being the only information needed. Another helpful sales aid is the lamp chest, in which the car owners can carry a set of six spare lamps for his car. With this chest it's easy to sell six lamps at once, as the lamps are specially selected to fit the customer's car.

Write Now No matter how many or few auto accessories you may have handled, write us for full particulars. If you think you can also handle flashlight lamps to advantage, write also for complete information on the Flashlight Assortment, another lamp renewal proposition as full of profit possibilities as the auto lamp assortment. The sooner you get your assortment of lamps the quicker you'll be prepared to take advantage of your share of the big fall renewal business.

EDISON LAMP WORKS
of General Electric Company
HARRISON, N. J.

EDISON MAZDA LAMPS

Made in U. S. A. and backed by MAZDA Service

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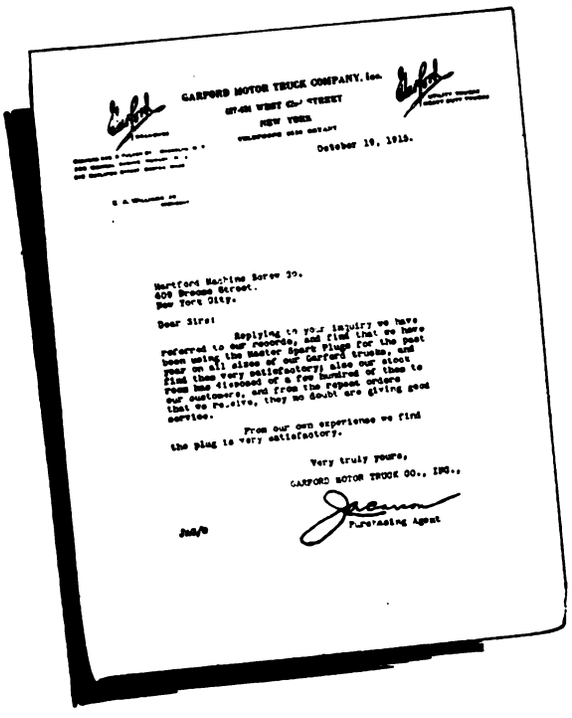

GARFORD MOTOR TRUCK COMPANY, Inc.
[illegible] WEST [illegible] STREET
NEW YORK
[illegible]

October 19, 1915.

Hartford Machine Screw Co.
409 Broome Street.
New York City.

Dear Sirs:

Replying to your inquiry we have referred to our records, and find that we have been using the Master Spark Plugs for the past year on all sizes of our Garford trucks, and find them very satisfactory; also our stock room has disposed of a few hundred of them to our customers, and from the repeat orders that we receive, they no doubt are giving good service.

From our own experience we find the plug is very satisfactory.

Very truly yours,
GARFORD MOTOR TRUCK CO., INC.,
Purchasing Agent

JAC/O

"From the Repeat Orders" —"The Plug is Very Satisfactory"—

Read the entire letter from the

Garford Motor Truck Company

—of New York—

It is a splendid testimonial to the efficiency of

MASTER Calorite Spark Plugs

MASTER *CALORITE SPARK PLUG*
EXTRA LONG
$1.25 each retail

It makes no difference to what kind of service these plugs are subjected—In the lightest cheapest pleasure car or the heaviest most expensive Limousine—In light delivery wagons or the heaviest trucks—In taxicabs—In motor buses.

Under all the varying conditions which obtain in these various types of gasoline motors and service,—Master Calorite Spark Plugs consistently maintain their record of the utmost in spark plug efficiency—

So when a concern with the reputation of the *Garford Motor Truck Company*—of New York endorses Master Spark Plugs—It is evidence of the fact that—These Plugs with our guarantee of genuine service—make an instant appeal to discriminating buyers—

Motor Truck Efficiency is dependent upon consistent uninterrupted operation—

Master Calorite Spark Plugs—are insurance against delays in delivery schedules—

A hot fat regular spark is certain in every cylinder of the engine—assuring a sweet running motor and keeping the car on the road—in constant operation—

Without the annoyance of broken or fouled insulators—Carbonized or burned points—Leakage of compression—thro or around the plugs—

Master Calorite Spark Plugs are backed by the manufacturers with one of the broadest guarantees given a spark plug—

"We guarantee MASTER CALORITE SPARK PLUGS against defects of material or workmanship, and will replace free of charge, any CALORITE insulators broken by heat, which are returned to us transportation prepaid."

SIX STYLES—Half-Inch Regular; 7-8" Regular; Metric; Model "F" for Fords and Reos: 7-8" Long; Half-Inch Long.

Retail prices **$1.00** and **$1.25** depending upon the type.—

Attractive display Stand in four colors, 14x20" is now ready for aggressive dealers stocking Master Calorite Spark Plugs. If you have Master Spark Plugs in stock and have not received your Display Stand, write for it at once.

MASTER CALORITE SPARK PLUGS

Made in U. S. A.

Manufactured and guaranteed by

THE HARTFORD MACHINE SCREW COMPANY

502 Capitol Avenue, Hartford, Conn.

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MASTER ELECTRIC FILLING STATION

$100. will put this wonderful attraction in front of YOUR Establishment. The balance you can pay monthly.

It will make your place a HEADQUARTERS, for the Motoring Public, and bring you more business in Gasoline, Oils and Supplies than you ever dreamed of.

MAKE YOUR PLACE BUSY!

have the trade coming and keep them coming. MASTER ELECTRIC FILLING STATIONS are irresistible. It pleases the Motorist to see how, by the mere pressure of an Electric Button, his car is filled almost Instantly. Accurate, Quick, Neat Service charms him, and he is YOUR steady customer for keeps. MASTER ELECTRIC FILLING STATIONS DRAW THE MAJORITY OF TRADE FOR A MILE AROUND.

If You want to boost your business—enjoy greater prosperity, don't let this opportunity get away from you. You can install a Master Electric as easy as any Hand Pump; no changes of Tank connections whatever. Your regular electric light current is used, and you can pump a thousand gallons for the price of a cigar.

Hundreds of Master Electrics Are Booming Business

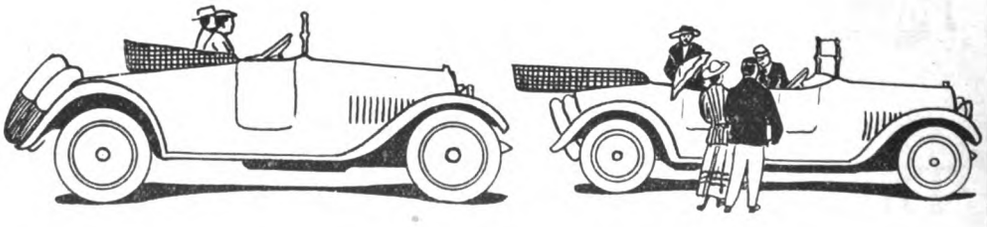
for their owners in various parts of the country. They all say it is the finest, slickest, sturdiest Business Builder they ever saw. It's a friend maker. Countless new customers will become your friends, and You will be our friend.

Master Electrics are sold with or without Milwaukee "Kant-Leek" underground Tanks, to meet any requirements.

MILWAUKEE TANK WORKS

151-201 Becker Street **Milwaukee, Wis.**

MANUFACTURERS OF 22 TYPES OF GASOLINE AND OIL TANKS AND PUMPS



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Motor Triumphs Made with AC Spark Plugs

61 Cars Now AC Equipped

Extract from Cadillac Advertisement Which Appeared in the June 17th Issue of the Saturday Evening Post:

"Consider, now, the almost miraculous endurance of the car, handicapped a hundred times over in the matter of road-bed, yet it traveled its distance *without so much attention to its motor as the cleaning of a spark plug.*"

WHEN Baker in a Cadillac Stock Roadster made that thrilling dash from Los Angeles to New York in May last—covering the 3371 miles in the remarkable time of 7 days, 11 hours and 52 minutes—his car was equipped, as are all stock Cadillacs, with AC Titan Spark Plugs. In the Hudson performances in the 24-hour race and in the one-mile dash, AC plugs played an important part. The Cadillac flight from coast to coast stands out as a most remarkable test of endurance and dependability for the car and for the AC Plugs, the standard Cadillac equipment.

The list of AC users is growing.

These cars name AC Spark Plugs as standard equipment—

Packard	Buick	Lexington-Howard	McLaughlin (Canada)
Pierce-Arrow	Oakland	Brockway Truck	Mercer
Cadillac	Oldsmobile	Chase Truck	Monroe
Marmon	Stearns-Knight	Daniels	Netco Trucks
Hudson	Saxon	Empire	Moreland Trucks
Chalmers	Stutz	Federal	Pilot
Hupmobile	National	G. M. C.	Sayers-Scovill
Chandler	Velie	Gramm Trucks	Crane-Simplex
Haynes	Jackson	Jeffery	Singer
Chevrolet	Apperson	Kissel Kar	Stephens
Dort	Davis	Palmer-Moore	United Truck
Cole	Detroiter	Murray	Wilcox Trux
Reo	Paterson	Bour-Davis	Jordan
Paige	McFarlan	Premier	Liberty
Peerless	Westcott	Knox	
Dodge Brothers	Enger		

Champion Ignition Co., Flint, Mich.

NEW YORK

LOS ANGELES

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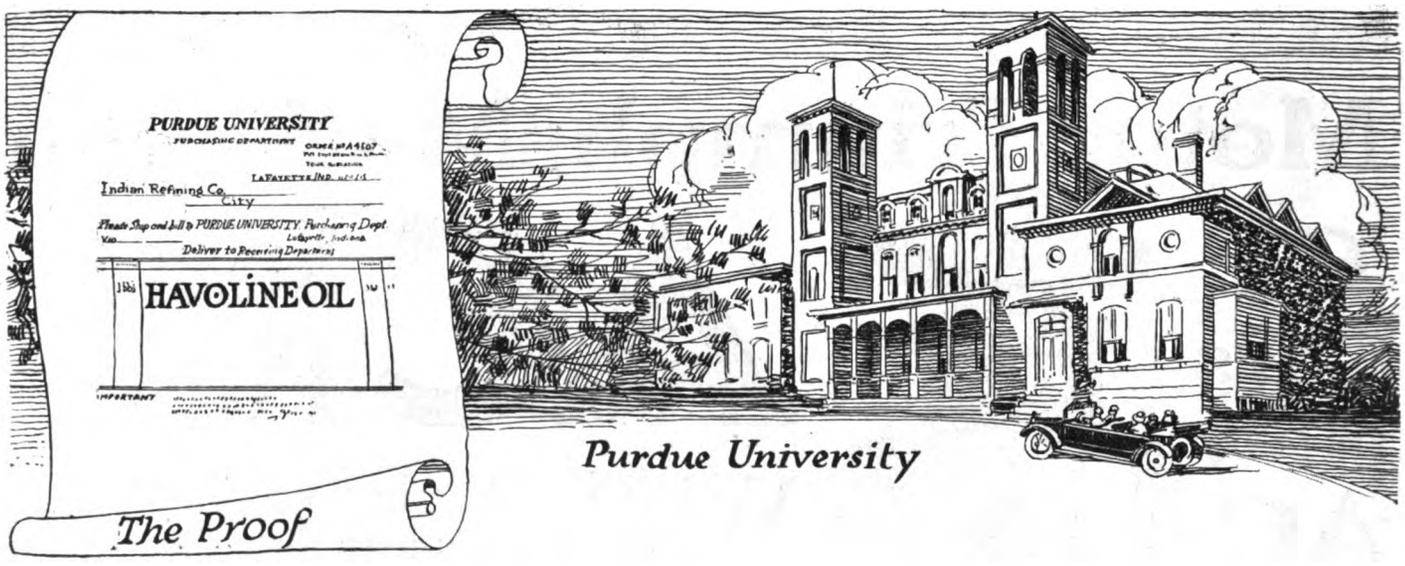


HAVOLINE OIL

The World's Standard Lubricant

FAMOUS scientific experts concede the superiority of Havoline Oil. In a competitive test held at Purdue University, Havoline outpointed the twelve leading brands of lubricants in every element by which the value of motor oils is measured.

The verdict is final. It places Havoline Oil beyond all dispute as the standard of the world.

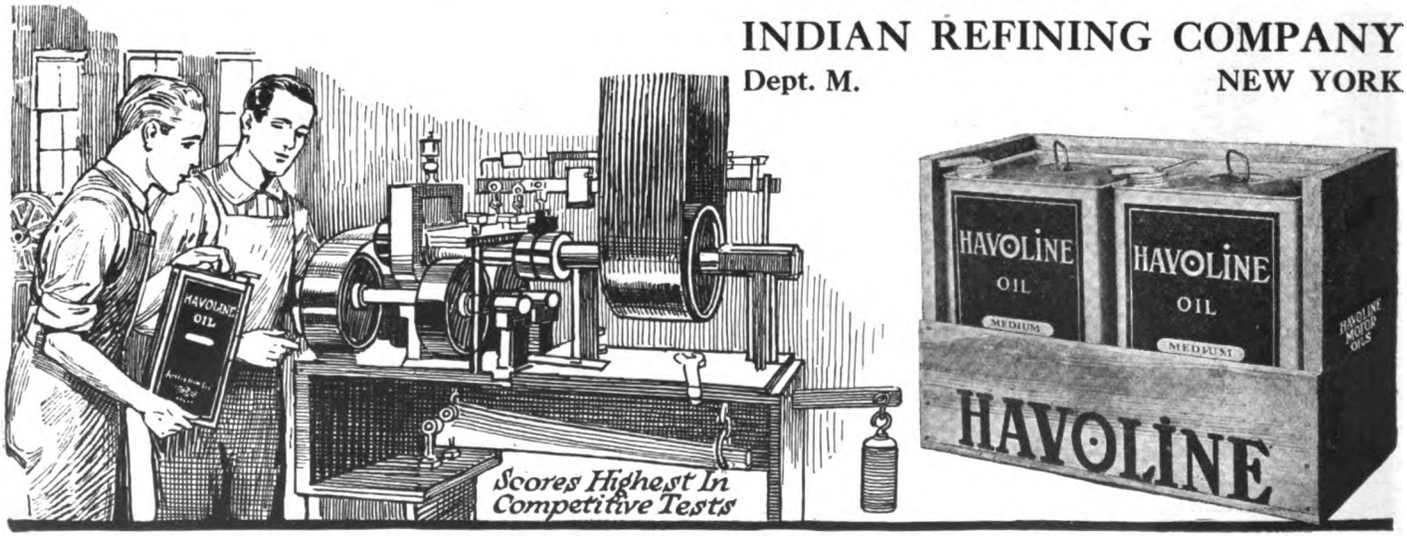
OUR package goods proposition is a winner. Send for it and act on it. You need Havoline in your business.

Our booklet "Havoline Oil Goes to College" free for the asking.

Line Up With The Champion Lubricant

The news of Havoline established pre-eminence is being heralded far and wide. Car owners won't temporize. They want the best and the *proof* of Havoline's superiority is ever before them.

Prove that *you* know. Recommend Havoline Oil for every make of car. "It Makes A Difference" to your customers and in your profits.



INDIAN REFINING COMPANY
Dept. M. NEW YORK

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Dealer Co-operation!

This full page in The Saturday Evening Post of Aug. 26, will sell more O-SO-EZY for YOU

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NEW YORK CHICAGO BOSTON DETROIT

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THE ACCESSORY AND GARAGE JOURNAL

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William H. Black, Treasurer.
AUTOMOBILE JOURNAL PUB. CO.
Published the 15th of Each Month.
D. O. Black, Jr., Secretary
Times Building, Pawtucket, R. I.

Entered as second class matter, December 30, 1911, at the Postoffice at Pawtucket, R. I., under Act of Congress of March 3, 1879.

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A Host of Bargains!

We carry the world's largest and most complete stock of automobile service and repair parts. Including recent purchases made by us we have now acquired the stock of over 100 automobile concerns.

You benefit in low prices—they are 50% below those of the manufacturers.

Big sale of Radiators—all sizes, **$15 and up.** Write for circular.

Remy L C Tube Coils and Switches **$6**
Jacox Right and Left Hand Drive Steering Gears **$10**
Gemmer Left Hand Drive Steering Gears **$15**
¾ Floating Weston-Mott Rear Axles with short pinion shaft, complete with hubs, drums and bearings **$55**
Fenders, all sizes and types **$3 and up**
Bodies, all sizes and styles **$50 and up**
Electric Head Lamps **$5 a pair**
Electric Side Lamps **$2.50 each**
Atwater Kent Ignition Systems **$5**
Ford 1916 Roadster Bodies with tops, windshield and rear fenders **$35**
Keeton 4-speed Transmission, with shifting leather **$50**
Khakai Roadster Tops, will fit Ford, many other make cars, special price **$10**
Complete stock of Piston Rings—gasoline service—cheapest, best on the market. Write for our list, sizes and prices.
Windshields, all sizes, types **$10 and up**
Rims, all sizes **$2.30 each**
Puritan Auto Trailer Truck, 750 lbs capacity, only **$40**
Puritan Ready to Fit Wooden Garages, price **$40**
Carburetors **$3 and up**
Springs, all sizes and types **$3 and up**
Wheels, any size **$3 and up**

If you do not see listed what you want, write for our illustrated Bargain Bulletin, free upon request—will positively save you money.

PURITAN MACHINE CO.,
51 10th Street DETROIT, U. S. A.

FOR SALE—A well established and prosperous automobile business in Detroit. Can show 50% to 75% profit yearly on investment of $7000. Good reason for selling. Inquire Box 4, Accessory and Garage Journal, Pawtucket, R. I.

CHURCH ENGINEERING COMPANY
Industrial and Mechanical Engineers
1223 Filbert Street, Philadelphia.
Develop, Market and Finance Patents.
Reorganize Industries.

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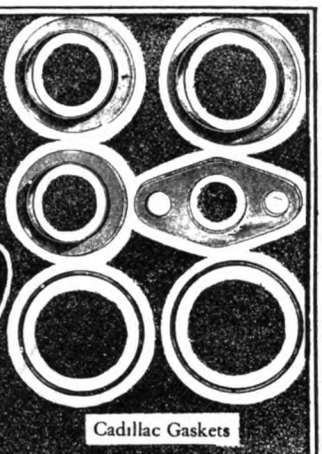
Liners—Shims

Two Point Hard Rubber Switches

Clero Hand Horn

Clero Electric Push Buttons


Cadillac Gaskets

FITZGERALD MFG. CO.

Statement of Facts.

We are the largest producers of standard and made to order metal specialties in the motor vehicle industry. We have for months advised our regular customers and now advise every jobber, dealer, garage, repair, and machine shop man in the automobile industry, to stock and protect themselves. Take care of your future needs today and for a period to come.

Raw material is hard to obtain and prices are constantly increasing. While we had and have a reserve supply of material on hand, many other makers in our line did not. This condition has caused greatly cut discounts or increase in prices, or both, second grade products, both in material and workmanship, very slow delivery and at the best unsatisfactory service.

While our enormous production has kept pace with the demand and our deliveries have been prompt, we will, no doubt, soon reach the limits of our great plants.

We have never changed the standard of our line—the highest quality in material, workmanship and finish, and have not increased the list or selling price. The discounts have remained the same. We have made as prompt deliveries as in the past.

We are now serving thousands of new customers and while we can, desire to increase the scope of our selling fields. We recommend that all trade interests secure a copy of our catalogue and discount sheets. We are in a position to estimate on special stamping work.

The trade selling Clero hand-operated horns for pleasure cars, trucks and motorcycles, are reaping a rich harvest. The line is complete, the selling price low, the discounts big and the profits are great.

Address all queries to main office

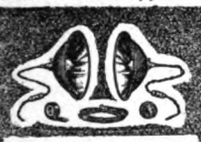
FITZGERALD MFG. CO.,
TORRINGTON, CONN.

Perfection Snap Cable Terminal

Standard Battery Con.

Clero Electric Push Buttons

Standard French Type Gaskets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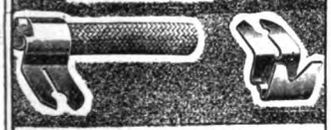
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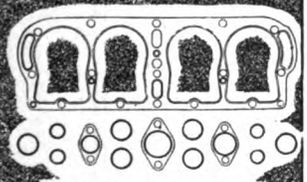
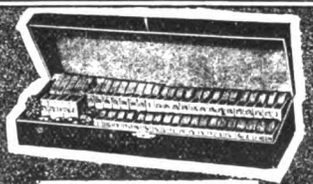

Gasket Sets for Ford Cars

Flange Exhaust Gaskets

Slip Snap Terminals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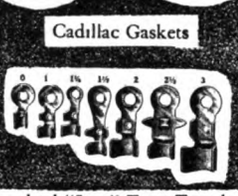
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Perfection Spring Battery Con.

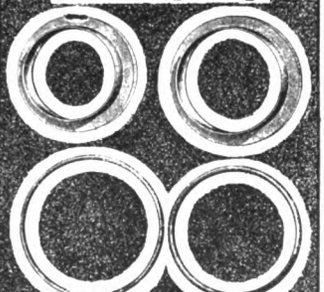
Shim Stock

Steering Post Attachments

Ford Ignition Assembly

Standard Closed Type Gasket

Standard Flange Fittings


Overland Gaskets

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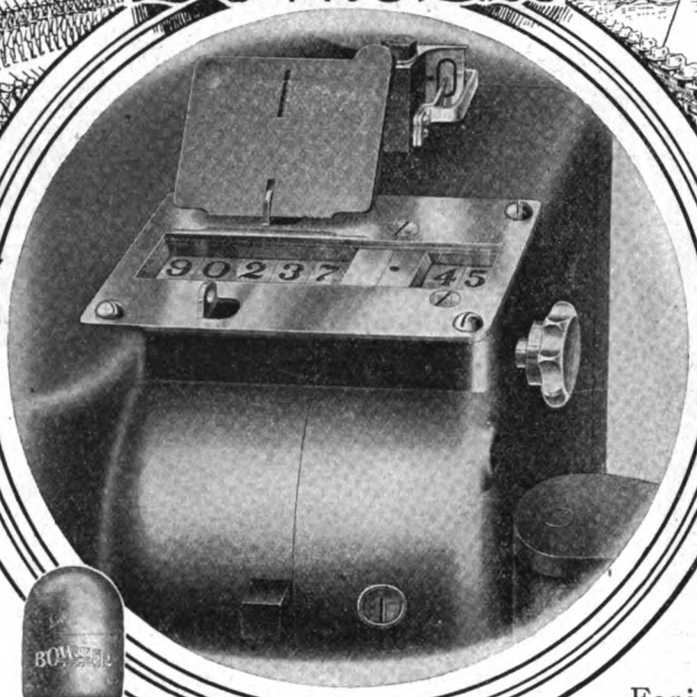
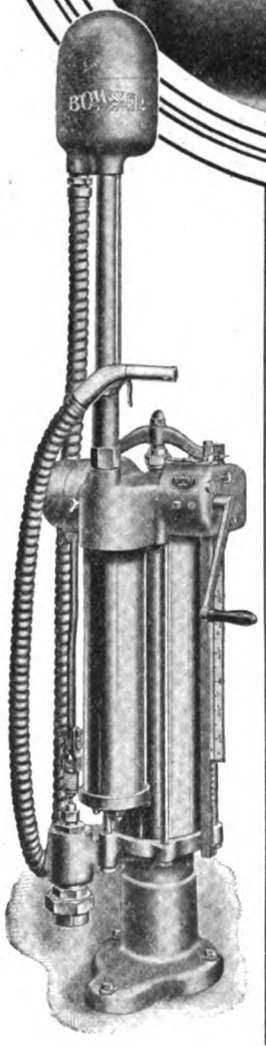
BOWSER
ESTABLISHED 1885

SYSTEM



WILL PROTECT YOU



For inside use or installation in protected locations you can't beat this "Red Chief" Gasolene Outfit. Pumps, filters and accurately measures five gallons at a stroke—or you can set it for any intermediate quantity as low as a quart.

It faithfully records every bit of gasolene drawn from your tank and no matter how many around your garage, use this pump you are protected against waste, spillage, theft or other losses.

It's especially adapted for use where there are a number of cars to be filled each day—all at about the same time—as with fleets of commercial trucks, etc.

We make storage tanks in all sizes for under or above-ground and portable use, with inside or outdoor pumps suitable for handling volatile or non-volatile fluids of all kinds.

S. F. BOWSER & COMPANY, Inc.

Engineers and Manufacturers of Oil-Handling Devices

FORT WAYNE, INDIANA, U.S.A.

Sales Offices in all Centers and Representatives Everywhere

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Dealers You Can Learn Something of Value By Reading This Advertisement

It tells about goods that you can sell at a profit and they will make permanent customers for you.

WOODWORTH TROUBLE-PROOF TIRES guaranteed against punctures and blow-outs for 5000 miles. Perfectly resilient. Most durable tires made.

By handling these tires you can build up a tire business that will stay with you and your trouble and expense for adjustments will be practically nothing. Liberal discounts allowed for the tires delivered transportation prepaid to dealers.

WOODWORTH TIRE COVERS are steel studded leather covers that protect the tires from all outside injury and roadwear. Prevent punctures and do away with the bother of chains for wet and muddy roads. The Light Weight Covers are low in price and do not make any appreciable load on the car.

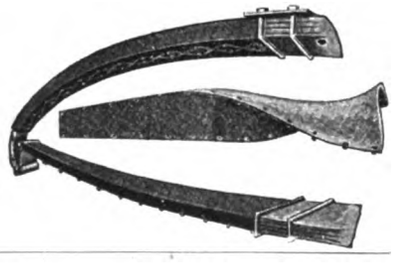
EASYON TIRE CHAINS are individual chains fastened to the spokes. They can be put on in a moment even when up to the hubs in mud.

Every car ought to carry a set to avoid the danger of getting stuck in bad places.

EASYON TIRE CHAINS NO-STRETCH, NO-SLIP Ford Fan Belts, made of very strong in-elastic fabric with especially treated horse hide leather facing. These belts are very durable; non-stretching; always hug the pulleys excellently and are reasonable in price.

WOODWORTH Spring Cover and Lubricator

A covering for the springs with a felt wicking on the inside for holding the oil. The wicking is saturated with oil before the covers are laced on and they keep the springs perfectly lubricated and perfectly clean, insuring perfect spring action.



Send for new booklet "AUTOMOBILE SUPPLIES THAT SATISFY" and dealer's proposition

Leather Tire Goods Co., SOLE MANUFACTURERS, Niagara Falls, N. Y.

Canadian Factory, Niagara Falls, Ont.

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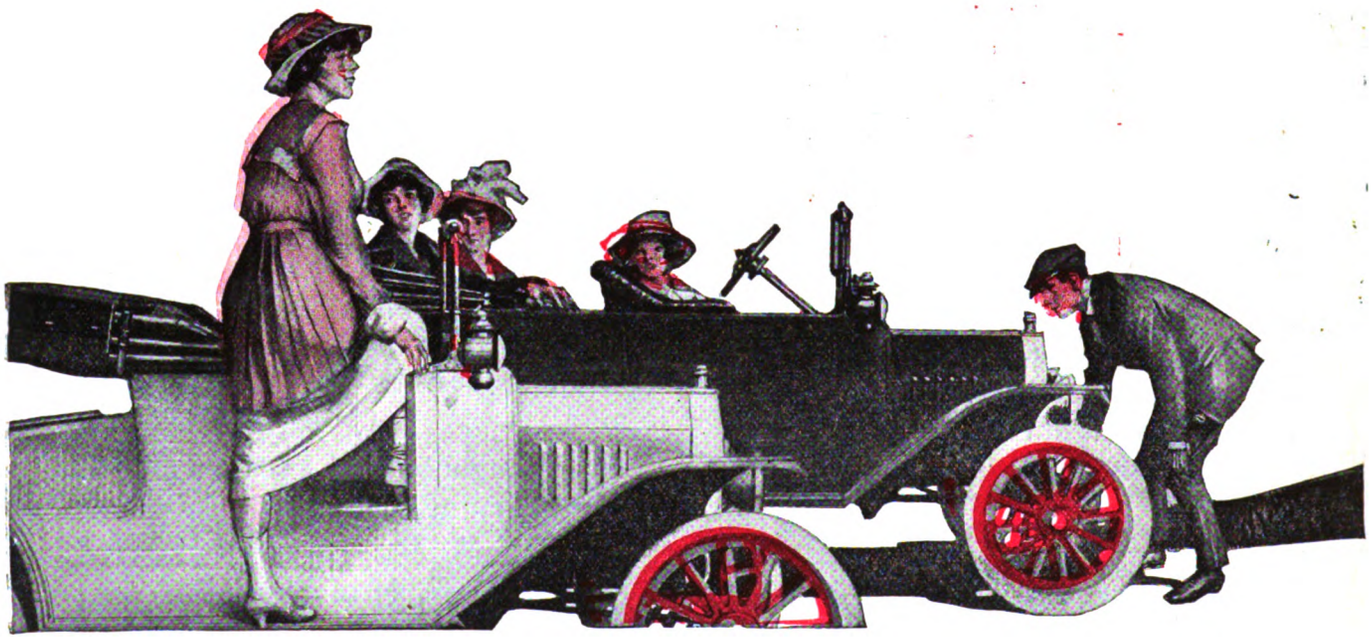
SHAFT-DRIVE

Genemotor

TRADE MARK



Why Don't You Get a Genemotor?

Genemotor matches the Ford in excellence.

It's the product of the General Electric Company, world's greatest specialists in electric motors.

Just like the Ford car, it is light, simple and strong. It is shaft-driven and that means still greater simplicity. Weighs 42 pounds.

Built to form a perfect auxiliary to the Ford engine.

Charges the battery at low speed. "U S L" Battery standard equipment.

It is the universal starter for the Universal Car.

Price $85 f. o. b. Lynn, Mass. Sold Everywhere.

A. J. PICARD & COMPANY

General Distributors

1720-1722 Broadway New York

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VOL VI. PAWTUCKET, R. I., AUGUST 1916. No. 4

New Capital For Overland.

Total Outstanding Capital Stock Has Been Increased by Addition of $15,000,000.

The Willys-Overland Company, Toledo, O., has disposed of $15,000,000 of its treasury stock to J. S. Bache & Co. and C. D. Barney & Co. of New York City, thereby increasing its outstanding capital stock from $22,500,000 to $37,500,000. The stock sold was part of the common shares in the company and $7,500,000 of the issue has already been sold, the remainder to be underwritten. Holders of the new issue as of March 15, 1917, will receive a dividend of five per cent. on April 2.

The present common stockholders of the Willys-Overland Company are entitled to subscribe to the new issue at $44 a share on the basis of two-thirds of a share for each share held. The holders of the $15,000,000 seven per cent. preferred stock outstanding have been given the opportunity to subscribe for one share at $25 par value for each share of preferred stock held. This offering to the preferred stockholders was made possible by Mr. Willys waiving his right to some stock which he had a right to subscribe for.

The 10 per cent. common stock dividend declared in July last is payable in two installments of five per cent. each Oct. 2 of this year and on April 2, 1917. The new issue of common does not share in the October disbursement, consequently the new stock is worth approximately $2.50 less than the shares of that class outstanding.

The company will have about $15,000,000 in cash and $30,000,000 of other quick assets when the receipts from the new issue have reached the treasury.

HAYNES STOCK DIVIDEND.

A stock dividend of 108 per cent. and authorization to increase the capital of the Haynes Automobile Company, Kokomo, Ind., from $1,400,000 to $4,000,000, have been declared by the stockholders of the concern. A new factory is to be started immediately, to be used almost entirely for quantity production of a new Haynes light six, the price of which will be about $1000. Thirty-two acres of land near the present plant have been purchased for the new building.

The annual report of the company shows net earnings for the fiscal year to have reached $1,600,000 on sales of 6700 cars. For the coming year an output of 12,000 cars is planned, 3000 of which will be the new Haynes twelves and the remainder light sixes.

The following have been re-elected to office: Elwood Haynes, president; Stephen Tudor, secretary; A. E. Starbuck, treasurer; A. G. Seiberling, general manager.

REDDEN INCREASES CAPITAL.

Incorporated little more than five months ago, the Redden Motor Truck Company, Detroit, has been compelled by the rapid expansion of its business, which is the production of the Redden Truck Maker, to increase the capital to $500,000 to provide for further expansion of the plant and greater freedom of operations. The reorganization involves no material change in management or policy.

The Redden Truck Maker is for converting Ford cars into one-ton trucks.

ENGER COMPANY EXPANDS.

Recently enlarging its capitalization to $4,000,000, the Enger Motor Car Company, Cincinnati, O., is now prepared to enter upon a more extensive manufacturing career than it experienced even when Frank J. Enger was the sole owner of the company. Improvements in the plant are to be made immediately, they to afford facilities for the production of 7500 Enger cars during the coming year.

The stock of the new company is divided into $1,000,000 convertable seven per cent. cumulative preferred and $3,000,000 in common, of $10 par value, of which $1,000,000 will be reserved for the conversion of the preferred, which is to be convertable at the option of the holder any time before Jan. 1, 1918, and thereafter at the option of the company at 120 and accrued dividends. The present plant has been taken over by the company free of all incumbrances. Stock is being offered on a basis of one share of preferred and two of common for $105.

Details of United Motors Corporation.

Has More Than 110 Large Buildings and Expects Annual Production of 28,000,000 Parts.

Of all the large and perfected consolidations of motor and accessory companies in the past year, none has attracted as much attention as that which created the United Motors Corporation, which is a merger of five accessory manufacturing companies, incorporated under the laws of New York.

There are several salient features about this corporation that are exceptional. The five concerns represented in the consolidation, the Dayton Engineering Laboratories, Hyatt Roller Bearing, New Departure Manufacturing, Remy Electric and the Perlman Rim companies, are not only the largest in their respective lines of manufacture, but have the reputation of making the very highest class of products. They were also in an excellent financial position at the time of the merger.

The United Motors Corporation has a capitalization of $60,000,000, which has already been fully subscribed. The offerings of stock were made at $62 a share. The men who direct the corporation are among the best known in automobile industrial circles and in Eastern and Western banking circles.

Alfred P. Sloan, Jr., vice president and general manager of the Hyatt Roller Bearing Company, is the president, and Edward A. Deeds, president of the Dayton Engineering Laboratories Company, is vice president. De Witt Page, president of the New Departure Manufacturing Company of Bristol, Conn., is secretary and treasurer. These officers, together with L. G. Kaufman, president of the Chatham and Phoenix National bank of New York City, and S. A. Fletcher, a banker of Indianapolis, make up the board of directors.

An idea of the extent of the operations of the combined companies is gained from the fact that over 110 large buildings are used for manufacturing plants, with an aggregate floor space of 2,449,229 square feet. Over 94,400 assembled parts are produced daily, or a total of 28,320,000 parts annually. Practically every motor car in use in America is equipped

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with one or more parts manufactured by some one of the subsidiaries and there are 10,318 different companies that use the products. Fifty sales and services branches are maintained throughout the country.

A further idea of the scope of the business of the United Motors Corporation is given in a recently published estimate, showing a 1917 automobile production of 1,500,000 motor cars, every one of which will have as part of its equipment at least one of the products of the five subsidiaries.

All these products are protected by patents and in most cases the process of manufacture are also protected. The yearly production of the five companies consists of 19,500,000 anti-friction bearings; 540,000 coaster brake hubs; 345,000 starting, lighting and ignition systems; 435,000 complete ignition systems; 7,500,000 demountable rims.

The combined earnings of the five companies, comprising the United Motors for the last fiscal year were $6,478,630, not including the Perlman Rim Corporation, which was not incorporated until March of this year. The following table gives the earnings of the individual companies for the last fiscal year and estimated earnings for the current fiscal year:

	1915-16	1916-17
Dayton Engineering Laboratories Co..	$1,554,319	$2,380,000
Hyatt Roller Bearing Co.....	2,484,964	4,250,000
New Departure Mfg. Co.	1,409,244	3,000,000
Remy Electric Co..	1,030,103	1,600,000
Perlman Rim Corporation	.....	2,500,000
Total.....:.....	$6,478,630	$13,730,000

Large increases in the earnings of the first three companies for the current year are due to the greatly increased facilities recently provided in the form of extensions to plants and other equipment.

The Dayton Engineering Laboratories Company, manufacturer of the Delco lighting and starting system, installed their product on 142,500 automobiles last year and orders have been received for about 200,000 systems so far this year, with expectations of 50,000 additional before the end of the season. There are 2500 employees on the company's pay roll. Over 1200 complete Delco systems were turned out daily by the concern during June. They are used on Buick, Cadillac, Cole, Dodge, Hudson, Oakland, Packard, Studebaker, Winton and a large number of other makes of automobiles.

There are 21 buildings, with 900,000 square feet of floor space in the plant of the Hyatt Roller Bearing Company. The 5000 employees turn out 40,000 complete roller bearings every day. This production will be increased to 50,000 sets a day within six months, this expansion in production being at present in process of development. During the 1916 season over 7,500,000 Hyatt bearings were supplied for automobiles and sales of 10,000,000 are confidently expected for the current season. Hyatt bearings were a part of more than 925,000 automobiles that were manufactured during the fiscal year ending July 31.

The New Departure Manufacturing Company's plant at Bristol, Conn., is made up of 51 separate buildings, with a total floor space of 722,809 square feet. The machinery is practically new, over 80 per cent. having been installed within the past few years. Over 2540 hands are employed and this number is being added to, as the company expects to nearly double its output by next spring. Last May the daily production was 14,800 bearings, 1800 coaster brake hubs and 1,500,000 balls.

The plant of the Perlman Rim Corporation at Jackson, Mich., comprises 18 buildings, with a floor area of 139,420 square feet. All the machinery is of the very latest type. In June the average daily production was 2000 sets of rims, but this will be increased to 5000 by Oct. 1. The manufacturers using Perlman rims include the makers of Chalmers, Chevrolet, Dodge, Jeffrey, Mitchell, Packard, Reo, Saxon and Willys-Overland cars.

The Remy Electric Company's plant comprises 29 buildings, with a floor area of 169,000 square feet, and has a daily output of 400 generators and 350 starting motors. The company was established 15 years ago. Plans are being carried out for a large increase in the production and it is expected that the year's output will reach a total of 535,000 systems.

NASH MOTORS FINANCING.

The financing plan of the Nash Motors Company, which was recently formed to take over the Thomas B. Jeffery Company plant at Kenosha, Wis., includes a liberal provision for future extension and expansion. Of the $29,995,500 capital stock $15,000,000 is set aside for the "purpose of acquiring properties along similar lines should the management so desire."

There is also $5,000,000 in preferred stock and 50,000 shares of common of no par value. The issue of preferred stock, which is non-voting seven per cent. accumulative, has been sold, together with 12,500 shares of the common. Lee, Higginson & Co. of Boston, who acted as purchasers of the Jeffery Company, with Charles W. Nash, made the offering privately on the basis of four shares of preferred and one share of common stock at $400. The offering was oversubscribed.

The preferred shares may be called by the company at its option as a whole at 105 any time before Nov. 1, 1920, and at $110 any time following that date. Beginning in 1920 a sinking fund of two per cent. of the amount of preferred stock issued will be reserved from the profits.

Between Oct. 1, 1902, and May 31, 1916, the gross sales of the company were over $53,000,000, with net profits of over $7,000,000 after deducting $1,660,600 for depreciation. Dividends of $2,327,800 were paid out of the earnings, the remainder being reinvested in the plant and business. A statement of the company's financial standing as of May 31, 1916, shown by a tentative balance sheet, gives the following figures: Real estate, plants and equipment, $2,962,000; other investments, $242,000; cash, $573,900; accounts and notes receivable, less reserves, $654,000; cars, work in process, materials, parts and supplies, less reserves, $3,037,000; deferred charges to future operations, $52,000; total assets, $7,412,600, after deducting $692,000 for current and accrued liabilities.

SELLING TIRES AT A PROFIT.

The Leather Tire Goods Company, Niagara Falls, N. Y., has established a policy of giving exclusive agencies to dealers who will carry a sufficient stock of their trouble-proof tires to take care of their territories, which places those dealers beyond the influence of price cutting.

This move is based upon the following contentions: Dealers and garage men in most large cities have found that there is little or no profit in selling the average brand of tire, largely because it is a regular practise for dealers to handle tires on a margin of five per cent., which is not enough to pay for the cost of doing business.

It is recognized that it is practically impossible in many cases to make a larger profit on standard makes, for most customers know that if one dealer will not sell at cut prices another will. To overcome this trade evil a dealer can obtain the exclusive agency for a tire which in some way is different from others, so that price cutters cannot offer an exact substitute at a lower price.

Some dealers in an attempt to make a living profit handle a cheap grade of tires that they can sell at a price as low or lower than their competitors and still make a good profit. This, however, is not especially satisfactory, for the cheaper goods generally give very poor service and the result is a dissatisfied customer and a loss of prestige to the dealer.

Another way to offset the condition is to handle a tire of better grade than the ordinary, carrying a better guarantee, and if the dealer happens to be the only one in his town who can supply this tire, he is generally assured of a fair profit and the customer is equally pleased with the service. It is sometimes very difficult to convince a prospective customer that the higher priced tire is worth the extra cost and unless there is something readily noticeable about the tire that is different from others the customer will often refuse it for fear he may be paying a high price for a tire that is no better than he has been accustomed to getting for less money.

The Leather Tire Goods Company bases its policy of exclusive agencies upon the distinctiveness of its Woodworth trouble-proof tires, which are guaranteed against both punctures and blow-outs for 5000 miles. They have in them strips of chrome tanned leather to prevent nails, etc., penetrating the shoe. The strip does not stiffen the tire nor detract from riding qualities in any way.

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All Ford Cars Reduced In Price.

New Rates Went Into Effect Aug. 1, the Touring Model Selling for $80 Less.

The Ford Motor Car Company has announced a reduction in prices of the various models of the Ford car, which makes the fifth cut in price in as many years. The reduction, which amounts to about 18 per cent. on all models, brings the price of the chassis alone to $325 as compared with $360 during the past year. The touring car model will sell at $360, which is a reduction of $80 from the price which prevailed up to Aug. 1. The other prices which became effective on that date are as follows: Roadster, $345; Couplet, $505; Town Car, $595, and Sedan, $640. These prices are a reduction of $45, $85, $45 and $100 respectively on the different models.

It has also been announced that the new models will be altered materially in appearance, the hoods sloped and with crowned fenders. A radiator with lines to harmonize with the new general design of body type has also been adopted.

In the spring of 1913 the Ford plant reached a productive capacity of 1000 cars daily; at present it is 2000 cars. It is understood that with the new plant facilities now in course of installation that this capacity will be nearly doubled.

G. M. C. EARNINGS HEAVY.

Gross sales of $144,000,000 for the first 11 months of the fiscal year are reported by the General Motors Company, an increase of over $58,000,000 as compared with the figures for the same period last year and more than $50,000,000 more than the entire gross of the entire preceding fiscal year.

The company produced 121,113 automobiles during the 11 months ending June 30, which exceeds the production of the entire fiscal year of 1915 by 43,045 cars. Undivided profits on the same date were $24,500,000, as compared with $11,686,280 on the corresponding date in 1915.

BUYS SPARK PLUG PLANT.

The V-Ray Spark Plug Company, Marshalltown, Iowa., has been purchased by the Stewart-Warner Speedometer Corporation, which will continue the manufacture of the V-Ray plugs in the new plant being erected in Chicago.

STEWART-WARNER PROFITS BIG.

The preliminary balance sheet of the Stewart-Warner Speedometer Corporation for the first six months of 1916 shows net profits of $1,275,000, which is equal to 13 per cent. on the company's common stock. The directors also voted to set aside $307,463 to retire a large block of preferred stock. A dividend of 1½ per cent. was declared on the common stock, payable Aug. 1 to stockholders of record July 22. The balance sheet as of June 30, 1916, shows total assets of $14,425,908.

LOCOMOBILE CO. PROSPEROUS.

The Locomobile Company of America, Bridgeport, Conn., manufacturers of the Locomobile line of pleasure cars and the Riker trucks, did a gross business during the quarter ending June 30, 1916, of about a million dollars more than during the same quarter last year.

Rumors of Merger Still Circulated.

Names of Large and Well Known Car Makers Still Linked in Talk of Combinations.

There is a new rumor of a gigantic automobile merger being circulated about in Wall street, and it is persistent despite the fact that no confirmation can be secured. The rumor in its present form is to the effect that J. N. Willys is making efforts to form a holding company to take over the Willys-Overland, the Packard and the Peerless companies, and that the securities would be offered through Kuhn, Loeb & Co. This concern, or the Willys bankers, would not affirm or deny the story. The Auto-Lite Company and the Fisk Tire Company, which were to have been involved in the recent merger that fell through, will be included in the new deal according to the talk in financial circles.

NEW STROMBERG COMPANY.

The Stromberg Carburetor Company of America, with $250,000 capital, has been incorporated at Albany, N. Y., to take over the Stromberg Motor Devices Company of Chicago. The new concern was organized by Allan A. Ryan & Co. of New York City, together with a number of other New York financiers. It is planned to enlarge the production of the concern and 37,500 shares of stock have been issued and offered to the public at $42 a share.

KRIT ASSETS $13,000.

The final reports filed in the case of the Krit Motor Sales Company, which became bankrupt in 1914, have been filed and show about $13,000 of the concern's assets on hand. The sum of $81,126 was realized from the sale of the company's property and the total disbursements were $67,883, of which $65,047 was paid out in dividends to creditors.

Kelsey Wheel Plants Combined.

Four Huge Wheel Manufacturing Factories Have Been Merged in $13,000,000 Company.

The Kelsey Wheel Company of Michigan, the Kelsey Wheel Company of Canada, the Kelsey Wheel Company of Tennessee and the Herbert Manufacturing Company of Detroit, have been merged into one company with $13,000,000 capitalization. John Kelsey will be president of the new company.

A limited amount of the common stock of the new concern has been offered to the public at $55. A part of the $3,000,000 preferred, which is seven per cent. accumulative, has also been offered. It is expected that the stock will be listed on the New York stock exchange.

The financing plan is unique. The $10,000,000 common stock will carry all the voting power and no dividend can be paid on this class of stock until the surplus has reached the sum of $500,000, at which time six per cent. may be paid, but nothing in excess of that amount until there is a surplus of at least $1,000,000. Three per cent. of the $3,000,000 preferred stock will be redeemed at $125 a share each year.

The Kelsey companies, although less than seven years old, had net tangible assets on Dec. 31, 1915, of $2,500,000, and at present have $10,000,000 worth of orders on their books and nearly 3500 people in their employ. During the first six months of this year the sales totalled $3,949,222, on which profits of $590,525 were shown.

It is stated that the contracts on hand for 1917 delivery call for 625,000 sets of complete automobile wheels and to provide for this production the erection of two new buildings and a power plant have been started at the Tennessee plant. The enlarged plant will have a capacity of 1500 sets, or 6000 complete wheels daily. An addition of over 300 men will be made to the force in Memphis, making 1000 employees connected with that plant.

ACCESSORY MERGER RUMORED.

A big accessory merger is said to be planned with a combined capitalization of $35,000,000 to $45,000,000, to include the Perfection Spring Company and 10 or 11 other concerns now doing business in Cleveland and other cities. It is understood that the consolidation, if it is effected, will not involve any large financial operations.

PRICE OF DORT ADVANCED.

The price of the Dort touring car, manufactured by the Dort Motor Car Company, Flint, Mich., has been raised to $695. The old price was $665.

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Simplex Co. In Aeroplane Merger.

New Jersey Automobile Company Is to Manufacture Motors for Airships It Is Reported.

The first big consolidation of aeroplane manufacturers has been announced in the merger of the Wright Company, the Simplex Automobile Company and the Glen L. Martin Company of Los Angeles, Cal., which will be known as the Wright-Martin Aircraft Corporation and will have $5,000,000 seven per cent. cumulative preferred stock and 500,000 shares of common of no par value.

In addition to the Wright patents the new concern has the rights on the latest French patents in this country which have made the French machines the most successful in the European war operations.

The Simplex company was acquired to build the new motor that will be used, the Hispano-Suiza, which develops 150 horsepower with a weight of but 363 pounds. The Simplex plant at New Brunswick, N. J., has been enlarged and in addition to manufacturing the aeroplane engines will also continue the production of the Crane-Simplex.

CUSHION WHEELS POPULAR.

The business of the Sewell Cushion Wheel Company during the first quarter of their fiscal year showed an increase of 300 per cent. as compared with the same period last year.

Having developed a big demand for the Sewell Cushion Wheel, the manufacturers to further extend its value to users are planning a series of service stations in the important cities of the country, where the wheels can be put on and repaired. These service stations, it is understood, will be established in connection with the branches at Buffalo, New York City, Philadelphia, Baltimore, Minneapolis, Rochester, Cleveland, St. Louis, Pittsburg, Los Angeles, Seattle and Chicago.

BOOM IN KENOSHA.

The city of Kenosha, Wis., the home of the former Thomas B. Jeffery Company, which has been taken over by the Nash Motors Company, is experiencing a mild boom in building owing to the construction of a large number of homes to accommodate the additional force of workmen which will be put to work in the plant. There are nearly 400 new dwellings now in the course of construction.

FALLS MOTORS STOCK.

An issue of $500,000 convertable seven per cent. cumulative preferred stock of the Falls Motor Corporation of Virginia has been underwritten by the banking firm of Andrews & Co. of New York and Chicago.

While incorporated under the laws of Virginia the Falls Motors Corporation has acquired the Falls Machine Company of Sheboygan Falls, Wis., which manufactures motors for the Grant Motor Car Company. The new concern is capitalized for $2,000,000, which includes the $500,000 preferred mentioned and $1,500,000 common stock. The preferred is convertable into common stock on the basis of one to 10, the common stock par value being $10.

Morris Metcalf has been elected a director and vice president of the Simplex Automobile Company and will have charge of all the commercial departments, including sales, body, service and publicity.

Maxwell Declares Dividends on Common.

President Flanders Plans for Production of 120,000 Cars During Next Fiscal Year.

An initial dividend of 2½ per cent. on the common stock of the Maxwell Motor Company and a dividend of six per cent. on the second preferred has been declared, payable to stockholders of record Sept. 11. The dividend on the second preferred is payable in quarterly installments of 1½ per cent. The regular dividend of seven per cent. on the first preferred was also declared payable quarterly. The remaining first preferred dividend warrants outstanding will be paid in cash.

President Flanders, after the meeting, made the following statement: "We plan a production of 120,000 cars the coming season compared with 60,000 in the fiscal period just closed. Our sales in July totaled 8000 cars and August figures will be nearer 9000 cars.

"Our present facilities enable the production of the schedule of 120,000 cars and, in fact, lately our output reached 400 a day. Our dealers have already contracted for over 80,000 cars for the coming year. Our export business is increasing nicely. Cars exported during the past year totaled over 3000."

FISHER BODY SELLS STOCK.

The Fisher Body Corporation, Detroit, the largest automobile body manufacturers in the world, has made arrangements with New York bankers to take $5,000,000 seven per cent. preferred stock and part of the common shares of the corporation.

The Fisher Body Corporation is a consolidation of the Fisher Body Company and the Fisher Closed Body Company of Detroit, and the Fisher Body Company of Canada, Ltd. The concern makes bodies for Ford, Cadillac, Buick, Maxwell, Chalmers, Hudson and a number of other cars.

Ford Produces 533,921 Cars.

Expectations of Officials Were Exceeded. Year's Gross Business Reached About $20,000,000.

The Ford Motor Company exceeded its expectations of half a million Fords for the fiscal year ending July 31, it manufacturing in that period 533,921 cars. In 1915 the Ford factory turned out 308,213 cars, over a quarter of a million less than this year's production.

The average daily production during the 296 actual working days was 1816 cars, as compared with 1027 cars daily in the preceding year. The highest production was on Feb. 29, when 2430 cars were manufactured and shipped.

The Ford company since it started in business has manufactured over 1,450,000 cars, and this year's production in money represents a gross business of upward of $200,000,000. It is understood that preparations have already been made for nearly doubling the output during the current year and it is also reported that a further reduction in the price would be announced at the end of next year.

The Ford Motor Company will abandon the branches of the main factory that are being maintained now in 51 cities. The business hereafter in these cities will be handled by individual dealers, who will maintain repair and garage facilities.

This announcement was made after the officials of the company had decided that it would not be practical to maintain garage and repair facilities in all the cities, although they remain of the opinion that such service for Ford owners will not only be a very good feature for owners, but would also help to stimulate sales.

JUMP IN CHALMERS ASSETS.

The assets of the Chalmers Motor Company, according to preliminary statements covering this year's business, increased 50 per cent. as compared with last year. For the fiscal year ending June 30 the gain in the total assets was $4,857,274, making the total now $13,051,538.

The surplus on hand on that date was $2,066,673.88, as compared with $1,010,422 on the corresponding date in 1915, while the cash on hand showed a decrease of $564,746, as against $1,173,135 last year.

JOIN MOTOR AND ACCESSORY MFRS.

The Rich Tool Company, manufacturer of engine valves and miscellaneous metal specialties, has been elected to membership in the Motor and Accessory Manufacturers, New York City.

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A SYSTEM OF ACCOUNTS FOR RETAIL MERCHANTS.

An Accounting System Devised by the Federal Trade Commission for the Purpose of Permitting Retailers of Merchandise to Conduct Their Business in a Way that Would Insure the Greatest Success.

INTRODUCTION.

THERE is a tendency among retail merchants to conduct their businesses without an adequate system for determining their costs. This condition carries with it various undesirable results. In the first place, the merchant is unable to price his goods intelligently and conduct his business upon sound business principles. In the second place, he is unable, when seeking credit, to produce a correct statement of his financial condition, which would enable a banker to extend to him the full credit to which he is entitled. He thereby limits the possible expansion of his business.

There are several forces at work which compel the retail merchant, if successful, to keep books, and the better and more comprehensive his methods the greater chance he has of being successful.

The first of these forces is, of course, competition, which at times compels him to make close prices. The second, and one of vital importance, is the attitude of the banks regarding the granting of credit. Banks are paying more and more attention to the accounting methods used by the merchant to whom they extend credit. They are willing to give larger loans and very often more liberal terms to the merchant who keeps his books in a way that enables him to show the bank at any time just how his business is progressing. A merchant who can show progress will undoubtedly receive more consideration with the same amount of assets than one who cannot. Even if he is successful, but cannot show it because of his bookkeeping methods, the bank will not consider him a desirable credit risk.

Another very important point to which the bank gives consideration is whether the prospective borrower is making proper provisions for depreciation on stock, buildings and fixtures, and his books should be so arranged as to show the amount of these provisions. No merchant can be said to be managing his business properly unless adequate provision is made for depreciation.

The system of accounts outlined in this bulletin has been devised to meet the requirements of retail merchants. The aim has been to devise the least involved system which will give the information essential to successful management. The best system of accounts for any business is one which furnishes the information required with the least effort.

The value derived from an adequate system of accounts is obvious. The greatest value is that of making comparisons and analyzing differences. But before any fruitful comparison can be made between figures of different periods or between figures of different stores, it is absolutely necessary that the systems be uniform. With a uniform system of accounts in use, differences in items reflect differences in conditions, while without a uniform classification, differences in items may reflect only differences in accounting classification.

In order to maintain the simplicity of the system, no departmentalization of the accounts is provided for, but any concern operating distinct departments can readily adjust the system to show the results obtained in each department.

A merchant in order to price his goods properly must know his overhead expenses. With a proper arrangement of his accounts the percentage of overhead may be readily obtained. Goods not priced high enough to cover this percentage are actually sold at a loss. The most convenient way of arriving at the proper percentage to add to the first cost of goods for overhead is to use the average ratio of operating expenses to net sales covering a past period. For instance, if a merchant's annual sales for the last fiscal year were $25,000 and the expense of conducting his business was $5000, his overhead was 20 per cent. By adding the desired percentage of profit on sales to this overhead percentage, and deducting from 100 gives the percentage of invoice cost to selling price. The invoice cost of an article divided by this percentage gives the selling price.

The rapidity of the turnover is a very important element in conducting a retail business. It is obvious that an increase in turnover goes hand in hand with an increase in profit. A slow turnover may be due to poorly selected stock, to overstocking, or to an inefficient selling organization. No effort should be spared to increase the turnover to its maximum. To ascertain the turnover divide the cost of goods sold during the year by the cost of the average stock carried.

BOOKS OF ACCOUNT AND STATEMENTS.

To operate the system of accounts here outlined requires but four books of account, namely, journal, general cash book, invoice book and ledger. Sales tickets and credit tickets are used for recording sales and sales returns.

From these books certain statements, particularly a monthly summary of business, a profit and loss statement, and a balance sheet, should be prepared at definite periods in order to present the results in comprehensive form.

Journal.

The ordinary two-column journal can be used. The opening entry is an inventory of the assets and liabilities.

The totals of the charge sales as shown by the charge tickets should be entered in the journal, debiting accounts receivable and crediting sales. The totals of the credit tickets are also entered in the journal, debiting sales with returns and sales allowances with price concessions

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MONTHLY SUMMARY OF BUSINESS, 1916. (Form A.)

	Net Sales.			Buying Expense.		Selling Expense.			Delivery Expense.		General Expense.								
	Credit.	Cash.	Total.	Salaries and Wages of Buying Force.	Miscellaneous Buying Expense.	Salaries and Wages of Sales Force.	Advertising.	Miscellaneous Selling Expense.	Salaries and Wages of Delivery Force.	Miscellaneous Delivery Expense	Management and Office Salaries.	Office Supplies and Expense.	Insurance on Stock and Store Equipment.	Taxes on Stock and Store Equipment.	Losses from Bad Debts.	Miscellaneous General Expense.	Rent.	Total Expense.	Per Cent. of Net Sales.
Jan.	$3,356.31	$1,301.65	$4,657.96	$25.00	$14.00	$177.33	$30.00	$3.75	$102.67	$8.08	$269.00	$22.03	$1.61	$2.50	$33.56	$26.79	$71.25	$787.57	16.9
Feb.																			
Mar.																			
Apr																			
May.																			
June.																			
July.																			
Aug.																			
Sept.																			
Oct.																			
Nov.																			
Dec.																			
Total,																			
Per Cent. of Net Sales																			

and crediting accounts receivable.

Transactions which do not go through either the cash book or invoice book should also be journalized. These entries comprise such items as notes receivable and payable, allowances or corrections of purchase invoices after entry in the invoice book, the various adjusting entries at the end of the month, and the closing entries at the end of the fiscal period.

Journal entries affecting trade customers' and trade creditors' accounts will also have to be posted, respectively, to accounts receivable account and accounts payable account.

General Cash Book.

This book is for recording all cash transactions. The left hand, or debit, side is for recording receipts, and columns should be headed as follows, in the order named: Date, name of account, description, ledger folio or LF, collections on accounts receivable, cash sales and general accounts. The right hand, or credit, side is for recording payments, and these columns should be headed: Date, name of account, description, check No., ledger folio or LF, discount on purchases, payments on accounts payable and general accounts.

The total cash receipts of each day should be deposited daily in bank and all payments should be made by check. The total of cash sales for the month should be checked against the total cash sales tickets, and is then posted to the credit of "Sales," that of the "Collections on Accounts Receivable" to the credit of "Accounts Receivable Account," and that of "Payments on Accounts Payable" to the debit of "Accounts Payable Account." The total of the discount on purchases column is also posted to the debit of accounts payable.

All payments for expense items other than petty cash should be entered on the cash book as made and posted therefrom to the proper accounts. At the end of the month all expense bills for the month should be paid, so as to insure the expense being charged in the proper month.

Petty cash disbursements, such as car tickets, telegrams and such minor items for which it is not expedient to draw checks, should be handled as follows:

A check should be drawn for an amount sufficient to cover petty disbursements for a definite period. At the end of the period the cashier should prepare his petty cash statement, which should be supported by vouchers, and a check drawn for the exact amount of the statement, thereby restoring the petty cash fund to the original amount. This check should be entered in the cash book in the regular way, charging the various expense accounts as shown by the petty cash statement.

The balance of the general cash book at all times should check with the balance as shown by the check book plus the amount advanced for petty cash.

In the check book keep checks and deposits footed separately. When the bank book is balanced, check up the bank list, then rearrange the checks in numerical order, and check with the stubs. If any checks are outstanding, note them on the stub and deduct from total of checks drawn; the check book balance will then agree with the bank book balance.

Invoice Book.

This book contains the record of the invoices or purchases of merchandise only and should carry the following headings: Date of entry, date of invoice, number of invoice, from whom purchased, address, ledger folio or LF and amount of invoice.

The postings are made direct from this book into the purchase ledger and the total at the end of the month carried to the debit of merchandise purchases and to the credit of accounts payable.

Where the business is departmentalized a more elaborate form of invoice book should be used, giving departmental subdivisions of purchases.

Sales and Credit Tickets.

The use of sales and credit tickets for recording sales and sales returns has become almost universal.

A sales ticket must be made out for every sale and the daily total of these gives the sales for the day. The cash sales tickets are checked against the cash received and the charge tickets go to the bookkeeper. Credit tickets must be made out for credits to customers and these likewise go to the bookkeeper.

Ledger.

The accounts in the ledger should be arranged in the following order:

1. General accounts.
2. Accounts with trade creditors.
3. Accounts with trade debtors.

Allotting to each class such space in the ledger as may be necessary.

The general accounts should be arranged in logical order. (See arrangement of accounts.)

Accounts with trade creditors and with trade debtors should be arranged alphabetically, using preferably a loose leaf ledger.

Where the volume of business permits, it is advisable to use three ledgers, a general ledger, a purchase ledger and a sales ledger, keeping controlling ac-

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counts of the purchase ledger and the sales ledger in the general ledger.

Where only one ledger is used it should be divided into three sections corresponding with the above.

The balances of the purchase ledger and of the sales ledger, or of these sections of the ledger if only one book is used, must agree with the balances of the accounts payable account and of the accounts receivable account. The advantage of these controlling accounts is that the aggregate of accounts payable and of accounts receivable can be had at any time without listing the balances of the individual accounts.

Customers are charged with goods purchased direct from the charge tickets. These tickets are first listed, then turned over to the bookkeeper, who posts them to the debit of the proper accounts, listing the amounts as he posts, then comparing his total with that of the first list, which must agree. Credit entries for allowances, reductions, cash discounts, or returned goods, are made from credit tickets in exactly the same manner.

Posting to the ledger therefore must come from one of four sources—the cash book, the journal, the invoice book or the sales and credit tickets.

Monthly Summary of Business.

This record, Form A, will be found very useful for monthly and yearly comparisons of expenses and ratios. It is arranged with columns for sales, both cash and credit and total, and for the various expenses of the business. The figures on this statement are taken from the ledger.

Each month the figures for that month should be added to the previous total so that the record will give the totals from the first of the year to date as well as the monthly totals.

Profit and Loss Statement.

The amounts for making up this statement, Form B, can be had from the ledger and from the trial balance. It is made up at such times as the inventory is taken. A physical inventory should be taken at least once a year. The basis should be cost with conservative deduction for obsolete and shelf worn goods. The inventory at the beginning of the period is, of course, that brought down from the end of the last period.

When monthly profit and loss statements are desired, and where the percentage of overhead and profit is known, the approximate cost of the goods sold can be arrived at in the following manner: Deduct the percentage of overhead and profit from 100 and multiply by the amount of the net sales; the result will be the cost of the goods sold, which when deducted from net sales will give the approximate gross profit on sales.

If desired, the difference between the values placed on the inventory and the actual cost of same can be shown on the statement. Show the actual cost of inventory and then the deduction under the title "Stock Depreciation," carrying the net forward as illustrated. While this is not necessary, it is valuable information and this method is recommended.

The total net profit as shown by the statement is that carried to the credit of the proprietor's account in the ledger.

Balance Sheet.

Ledger accounts should be kept by the double entry principle with all real (asset and liability) accounts, as well as with all nominal (profit and loss) accounts. A balance sheet of the same date as the profit and loss statement should be made up from the balances of all real accounts. The ordinary asset and liability accounts and a logical classification thereof are shown by Form C.

ACCOUNTS AND THEIR EXPLANATIONS.

REAL ACCOUNTS.

1. Cash on Hand and in Bank.

Charge this account with the total receipts of the month and credit it with the total disbursements as shown by the cash book. The balance should agree with the cash book balance.

2. Notes Receivable—Trade Customers.

Charge this account with all notes, time drafts and acceptances held against others and credit it with the same when paid or otherwise disposed of. The balance will show the uncollected notes receivable.

3. Accounts Receivable—Trade Customers.

Charge this account with the total of the charge tickets of the month, and credit it with the cash payments by customers (taken from the cash book at end of month) and with notes receivable, discounts, returns and allowances (from the journal and credit slips). Balance of this account must agree with the sum of the balances of trade customers' accounts.

4. Reserve for Bad Debts.

Credit this account with an estimated amount, based on charge sales, sufficient to provide for losses, and charge the account with the balances of personal accounts when hope of collection is abandoned.

5. Prepaid Insurance.

Charge this account with all insurance, fire, burglary, fidelity, plate glass, liability, etc. At the end of each month charge the proper accounts (Nos. 35 and 44) with their proportion, the balance being an asset as "Prepaid Insurance."

6. Accrued Interest Receivable.

Charge this account at the end of the period with all accrued interest (not yet

PROFIT AND LOSS STATEMENT, JAN. 31, 1916. (Form B.)

						Per Ct.	Per Ct.
23	Sales				$4,659 96		
24	Less Sales Allowances				2 00		
	Net sales				4,657 96	.....	100.0
	Inventory of merchandise at beginning		$3,451 09				
25	Merchandise Purchases (cost delivered at store)		2,759 67				
			6,210 76				
	Deduct inventory of merchandise at closing	$3,062 17	.....				
	Less Stock Depreciation	153 11	2,909 06				
	Net cost of goods sold				3,301 70	....	70.9
	Gross profit from trading				1,356 26		29.1
	BUYING EXPENSE.						
26	Salaries and Wages of Buying Force	25 00					
27	Miscellaneous Buying Expense	14 00					
	Total buying expense		39 00			0.8	
	SELLING EXPENSE.						
28	Salaries and Wages of Sales Force	177 33					
29	Advertising	30 00					
30	Miscellaneous Selling Expense	3 75					
	Total selling expense		211 08			4.5	
	DELIVERY EXPENSE.						
31	Salaries and Wages of Delivery Force	102 67					
32	Miscellaneous Delivery Expense	8 08					
	Total delivery expense		110 75			2.4	
	GENERAL EXPENSE.						
33	Management and Office Salaries	269 00					
34	Office Supplies and Expense	22 03					
35	Insurance on Stock and Store Equipment	1 61					
36	Taxes on Stock and Store Equipment	2 50					
37	Losses from Bad Debts	33 56					
38	Miscellaneous General Expense	26 79					
39	Rent	71 25					
	Total general expense		426 74		787 57	9.2	16.9
	Net profit from trading				568 69	.....	12.2
	INCOME FROM OTHER SOURCES.						
42	Interest	17 09					
43	Cash Discounts on Merchandise Purchases	6 55					
44	Rent income (net)	16 52					
45	Miscellaneous Outside Income	2 00			7 98		
	Total net profit				576 67		

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paid) on notes, etc., due from others, crediting "Interest Account." When the interest is received it is credited to "Accrued Interest Receivable."

7. Store Property.

Charge this account with the purchase price of the store property. Do not charge repairs to this account, unless they are in the nature of permanent improvements. A fair amount should be periodically credited to "Reserve for Depreciation."

8. Warehouse Property.

Charge this account with the purchase price of the warehouse property. Do not charge repairs to this account, unless they are in the nature of permanent improvements. A fair amount should be periodically credited to "Reserve for Depreciation."

BALANCE SHEET, JAN. 31, 1916. (Form C.)

	ASSETS.						
	CURRENT ASSETS.						
1	Cash on hand and in bank			$1,611	67		
2	Notes Receivable—Trade Customers			191	84		
3	Accounts Receivable—Trade Customers	$3,518	81				
4	Less Reserve for Bad Debts	33	56				
				3,485	25		
	Inventory of merchandise (at cost)			2,909	06		
5	Prepaid Insurance			100	14		
6	Accrued Interest Receivable				71		
	Total current assets					$8,298	67
	FIXED ASSETS.						
7	Store Property	4,500	00				
8	Warehouse Property	1,975	00				
		6,475	00				
9	Less Reserve for Depreciation on Store and Warehouse	26	98				
				6,448	02		
10	Store Equipment			272	71		
11	Office Equipment			74	37		
12	Delivery Equipment			396	67		
	Total fixed assets					7,191	77
	Total assets					15,490	44
	LIABILITIES AND CAPITAL.						
	CURRENT LIABILITIES						
13	Notes Payable—Trade Creditors	1,210	50				
14	Notes Payable—Banks	900	00				
15	Accounts Payable—Trade Creditors	3,685	72				
16	Accounts Payable—Others	485	00				
17	Accrued Interest Payable	19	23				
18	Accrued Salaries and Wages	82	00				
19	Accrued Taxes	7	75				
	Total current liabilities			6,390	20		
21	Mortgages Payable (warehouse)			1,250	00		
	Total liabilities			7,640	20		
22	Proprietor's Capital Account			7,850	24		
	Total liabilities and capital					15,490	44

9 Reserve for Depreciation on Store and Warehouse.

Credit this account with the amount of depreciation on store and warehouse, and charge same to "Rent Income" (No. 44).

10. Store Equipment.

Charge this account with the value of all equipment such as counters, shelving, scales, measures, etc., used in the conduct of the business. A fair amount should be written off periodically for depreciation.

11. Office Equipment.

Charge this account with office furniture, desks, safe and other office appliances (not included in 34). A fair amount should be written off periodically for depreciation.

12. Delivery Equipment.

Charge this account with the cost of automobiles, wagons, horses and harness. This account must not be charged with repairs to automobiles and wagons, horseshoeing or anything of this nature. A fair amount should be written off periodically for depreciation.

13. Notes Payable—Trade Creditors.

Credit this account with all notes given to trade creditors or time drafts accepted in their favor and charge the account as the same are paid. Balance of this account shows the amount of notes payable outstanding.

14. Notes Payable—Banks.

Credit this account with all notes given to banks and charge the account as the same are paid.

15. Accounts Payable—Trade Creditors.

Credit this account with merchandise bought on account, the amount being carried to this account monthly from the total of the invoice book and charge it with all merchandise returned and reductions (journal), and payments made and discounts taken (cash book). Balance of this account must agree with the sum of the balances of trade creditors' accounts.

16. Accounts Payable—Others.

Credit this account with amounts owing to creditors other than trade creditors.

17. Accrued Interest Payable.

Credit this account at the end of the period with interest accrued (not yet paid) on notes, etc., due others, charging "Interest Account." When the interest is paid it is charged to "Accrued Interest Payable."

18. Accrued Salaries and Wages.

Credit this account with salaries and wages earned and unpaid at the end of each month and charge the proper expense accounts. When payment is made this account is charged and closed out and the balance of the pay roll charged in the regular way.

19. Accrued Taxes.

Credit this account with the taxes due up to the end of each month, charging the proportionate amounts to the accounts in which they belong. When the taxes are paid this account will be charged.

20. Proprietor's Drawing Account.

Charge this account with all withdrawals of cash (not salary). At the end of the period the amount of this account is closed into proprietor's capital account.

21. Mortgages Payable.

When a mortgage is placed upon real estate (or assumed at the time of purchase) this account is credited. When paid it is charged.

22. Proprietor's Capital Account.

This account represents the proprietor's net capital. At the end of the period the net profit is credited to this account. The amount of his drawing account is then closed into this account. The balance of the account is his net capital at time of closing.

In the event of a partnership each partner's net capital would be shown in his respective account and the net profit (or loss) carried to the credit (or debit) of their accounts in agreed proportions. In the event of a corporation this account represents the amount of the issued capital stock and the profit or loss is carried to "Surplus" account.

NOMINAL ACCOUNTS.

23. Sales.

Credit this account with the total sales of all merchandise, the charged sales being taken from the total of the charge tickets for the month and the cash sales from the "Cash Sales" column in the cash book. Returns should be charged at selling price for all merchandise returned by customers whether for cash or credit. The difference in this account will be the net sales which is transferred to the credit of "Trading Account."

24. Sales Allowances.

Charge this account with any allowance given a customer not contemplated when sale was made. Allowances should not be charged to "Sales," but closed at the end of the period into "Trading Account."

25. Merchandise Purchases.

Charge this account with the face of the invoices of merchandise before deducting cash discounts. The account is also charged with freight, expressage and drayage on merchandise purchased. Credit the account with any returns of merchandise made to manufacturer or wholesaler and with any allowances for defects in goods received from manufacturer or wholesaler. The balance of the account is transferred to the debit of trading account.

26. Salaries and Wages of Buying Force.

Charge this account with part of salary of proprietor, active partner and manager or buyer and the wages of office force proportionate to the time given to buying. If, for example, the proprietor estimates altogether that he gave one-fourth of his time to buying and three-fourths to selling, then one-fourth should be charged to this account and three-fourths to "Salaries and Wages of Sales Force." Similarly the estimated number of hours a week given by any member or members of the office force to buying should be charged to this account.

27. Miscellaneous Buying Expense.

Charge this account with the travelling expense of buying trips and other expense incurred in buying (not covered by account 26).

28. Salaries and Wages of Sales Force.

Charge this account with wages and other remunerations of sales persons, order takers and all others engaged in selling, both as regular and extra force; also with the part of the salary of the proprietor, active partners, or manager, and of the wages of the office force proportionate to the time given to selling.

29. Advertising.

Charge this account with all expenditures for advertising purposes, such as space in newspapers and periodicals,

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space on street cars and billboards, circulars and postage thereon, advertising novelties, trading stamps, charitable donations, window display, electric signs, etc.

30. Miscellaneous Selling Expense.

Charge this account with the cost of wrapping paper, cartons, twine, salesmens' order books, and all other items of direct selling expense not covered by "Salaries and Wages of Sales Force" and "Advertising."

31. Salaries and Wages of Delivery Force.

Charge this account with regular and part time of employees engaged in delivering and with the part of the wages of other employees, whether on sales force or office force, proportionate to the time given to delivery work.

32. Miscellaneous Delivery Expense.

Charge this account with all stable and garage expense, including all repairs, taxes, licenses, upkeep and with the depreciation charged on the delivery equipment; also charge this account with payments for express, parcel post and contract delivery service.

33. Management and Office Salaries.

Charge this account with the salaries of the manager, bookkeepers, office clerks, stenographers and of other general office help not otherwise charged.

34. Office Supplies and Expense.

Charge this account with purchases of stationary of all sorts, account books and forms (except selling and stock forms), typewriter supplies, printing and postage (except advertising), and depreciation on office equipment.

35. Insurance on Stock and Store Equipment.

Charge this account with all expense of insurance, fire, burglary, fidelity, plate glass, employers' liability and other. This account is not to be charged with insurance on store or business property.

36. Taxes on Stock and Store Equipment.

Charge this account with taxes on all stock and store equipment. As taxes are not payable in advance, the amount charged this account must be credited to "Accrued Taxes."

37. Losses from Bad Debts.

Charge this account with the amount that has been reserved for bad debts (4).

38. Miscellaneous General Expense.

Charge this account with heat, light, repairs, depreciation on store equipment, and with any items that cannot be charged directly to any of the above particular accounts.

39. Rent.

Charge this account with all rents paid. If the store is owned, rent should be charged equivalent to the amount it could be rented for to others, crediting "Income from Other Sources;" in the latter event, "Income from Other Sources" should be charged with the taxes, insurance, repairs and depreciation on the store.

40. Trading Account.

This account shows the inventory of merchandise at opening and is not touched again until the books are closed. It is then charged with merchandise purchases 25) and sales allowances (24) and credited with sales (23). The inventory at closing is then credited and the balance will show the gross profit on trading. The gross profit is transferred to the credit of the "Profit and Loss Account." The inventory is then brought down as a new balance.

41. Profit and Loss Account (from Trading Operations).

Charge this account with the balances of all the expense accounts and credit it with the gross profit from trading; the difference will be the net profit or loss, which is closed into the proprietor's account; if a partnership, to the partners' accounts, according to their several interests, and, if a corporation, to the surplus account.

42. Interest.

Charge this account with all interest paid and credit it with all interest received and close into "Profit and Loss Account."

43. Cash Discount on Merchandise Purchases.

Credit this account with all cash discount taken on purchases of merchandise. The account is closed into profit and loss.

A record of such discounts available but not taken—cash discounts lost—will be found of use.

44. Rent Income (Net).

If the store is owned, the rent which has been charged to account 39 should be credited to this account and it should be charged with insurance, taxes, depreciation and repairs on store. The account is closed into "Profit and Loss."

45. Miscellaneous Outside Income.

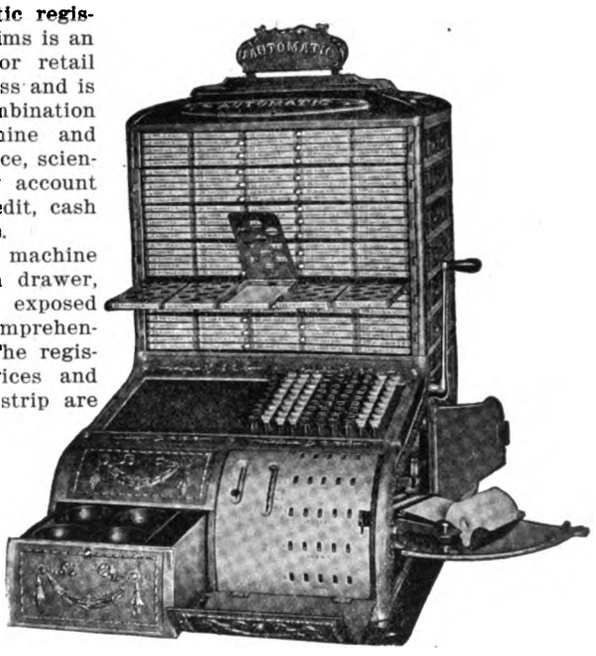
Credit this account with incidental receipts such as toll from telephone pay stations in store, etc.

New Automatic Accounting Register.

Machine Is a Combination Adding, Credit and Sales Register for Retail Merchants.

The Automatic Bookkeeping Register Company, Kansas City, Mo., has brought out what is called the automatic register, which the manufacturer claims is an advanced accounting system for retail merchants doing a credit business and is the first and only successful combination of credit register, adding machine and cash register in one simple device, scientifically designed to accurately account and permanently record all credit, cash and supplementary transactions.

The illustration shows the machine with credit compartment, cash drawer, detail strip and register faces exposed for the purpose of giving a comprehensive idea of its mechanism. The register contains five totaling devices and steel type; ribbon and detail strip are used to establish permanent records of all transactions. Keys are provided to designate dollars and cents. Certain keys bear numbers corresponding to those given to individual clerks to establish identity of the salesman on the detail strip. Other keys bear numbers to denote customers' credit accounts.



Automatic Sales Register.

The cash draw opens automatically for every cash transaction, the character of which is designated by an impression of the key which the clerk is required to depress before operating the drawer. Likewise in a credit transaction the clerk makes a record by means of certain other keys before the customers' credit compartment can be opened, the complete record being printed on the detail strip.

At the close of business each day the totals shown on the five totaling devices are mechanically transferred to the detail strip, which shows the amount of business done, with a complete record of each transaction to be filed away for reference at any time. The totaling devices may be utilized as adding and listing machines, as all five print on the detail strip.

The register was shown at the Panama Pacific exposition in 1915 and was awarded a gold medal and attracted wide attention. The manufacturer is arranging for the distribution of the register, the plan being to organize subsidiary corporations, each branch to be known as the Automatic Register Sales Company. Offices have been opened in the Continental and Commercial Bank building, Chicago, in the Grain Exchange building, Oklahoma City, and in the Busch building, Dallas, Tex. Contracts for district agency representation are now being closed.

TO BUILD HEAVY TRAILERS.

The Warner Manufacturing Company, Beloit, Wis., manufacturer of the Warner auto trailer, will shortly place upon the market a line of heavy duty trailers of two, three and five tons capacity. The production will be under the personal direction of A. P. Warner, who has been experimenting with the trailer for the past two years. The Warner trailer coupling, also manufactured by this concern, will be standard equipment on a number of well known makes of trucks during the coming year.

HEAVY GOODRICH EARNINGS.

The earnings of the B. F. Goodrich Company for the six months ending June 30, 1916, were $4,800,000, an increase of $800,000, or 20 per cent. over the corresponding period in 1915. The net earnings during 1915 were $12,265,000.

The regular quarterly dividend of 1¾ per cent. on the preferred stock has been declared, payable Oct. 2 to stockholders of record Sept. 1. The regular quarterly dividend of one per cent. on the common stock, payable Nov. 15 to stockholders of record Nov. 3 was also declared.

The garagemen and dealers of New Philadelphia, O., and vicinity met recently to form an organization and affiliate with the Ohio Automobile Trade Association. F. T. Price,- state president, attended.

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HOME OF PARTS FOR "ORPHAN" CARS.

UNIQUE among the business concerns in the automobile industry is the Puritan Machine Company, of Detroit, Mich., the only establishment in the United States which stocks every part of every make of automobile, from the smallest washer to the body of a seven passenger car. More than 2,000,000 items of automobile parts and accessories, the largest number of which are for motor cars that are not now being manufactured, are housed in the company's main plant and adjacent warehouses, at Lafayette boulevard and 10th street.

Until the Puritan Machine Company was organized by Alfred O. Dunk, who is now president of the concern, car owners and repairmen found that to obtain replacements for "orphan" cars was a serious problem. There are many such automobiles now in operation for which the Puritan company has the parts. To the employees the floors are ed the stock of more than 100 defunct companies, the purchase not only consisting of such parts as the manufacturer may have had in stock, but included jigs, dies, special tools, blue-prints, drawings, etc., which makes it possible for the company to continue the distribution to repairmen and car owners.

Some of the Cars.

Among the cars for which is carried a large and complete stock of parts are the following: Abbott, Aerocar, Anhut, Barnes, California, Carhart, Cartercar, Century, Clarke, Clarke-Carter, Crescent, Cutting, Dart, DeLuxe, DeMot, Elmore, Everett, F. A. L. Car, Grabowsky, Havers, Henderson, Krit, Marquette, Michigan, Northern, Ohio, Omaha, Owen, Speedwell, Stoddard-Dayton, Queen, Ranier, Reliable-Dayton, Scripps-Booth Cyclecar, Warren, Wayne, Welch-Detroit and Welch-Pontiac.

The General Accessory Store of the Puritan Machine Company.

"Rejuvenation" Department.

One of the most important departments of the company is that devoted to the rejuvenation of used and worn cars of defunct concerns, a business in which this company is a pioneer. With its practically inexhaustible stock and manufacturing facilities the company can virtually rebuild such a car, bringing it up to a higher state of efficiency than the original model and at such a low cost that the owner is saved a large sum and can have a car that cannot be told from a new model.

The accessory store forms a considerable part of the business. Here Detroit motorists can secure accessories and parts and out of town owners can be served by mail or express. The mail order business of this concern is now one of the largest of its kind in the country. In connection with the plant there also is a large and completely equipped machine shop which is used exclusively for machine work on the stock. No outside work is done.

So great has become the business of the company that its five story plant has been found too small to accommodate the demand, and consequently it is being expanded by the addition of two stories to the machine shop and the erection of another large storehouse.

Comprehensive Filing System.

Storing 2,000,000 parts so that any can be quickly found is quite a problem in itself. The Puritan company has solved it very satisfactorily as would be shown by a trip through the stock rooms. Each Floor appears to the uninitiated to be a bewildering labyrinth of tiers of shelves, drawers, bins, and stocks of metal and parts. To the employees the floors are systematically arranged filing cabinets from which they can obtain instantly and without search any article required. The plant is divided up into departments, which consist of certain units of space presided over by a department head, with a corps of assistants, clerks and stenographers.

The head of this unique and interesting institution is Alfred O. Dunk, who started in business in a modest way about 10 years ago and has developed it into the present corporation which has a capital and surplus of several thousand dollars. The other officers are Enoch Smith, vice president, H. G. Gremel, general manager and treasurer, and O. R. Taylor, secretary.

The Repository for Motors, Etc., for More Than 100 "Orphan Cars."

REDUCES PRICE OF DIFFERENTIAL.

The Geerless Differential Company, 864 Woodward avenue, Detroit, announces a reduction in the price of its replacement differentials, which went into effect July 1. The former price of the Ford and Chevrolet 490 types was $20, and is now $15. The Overland type has been reduced from $25 to $20.

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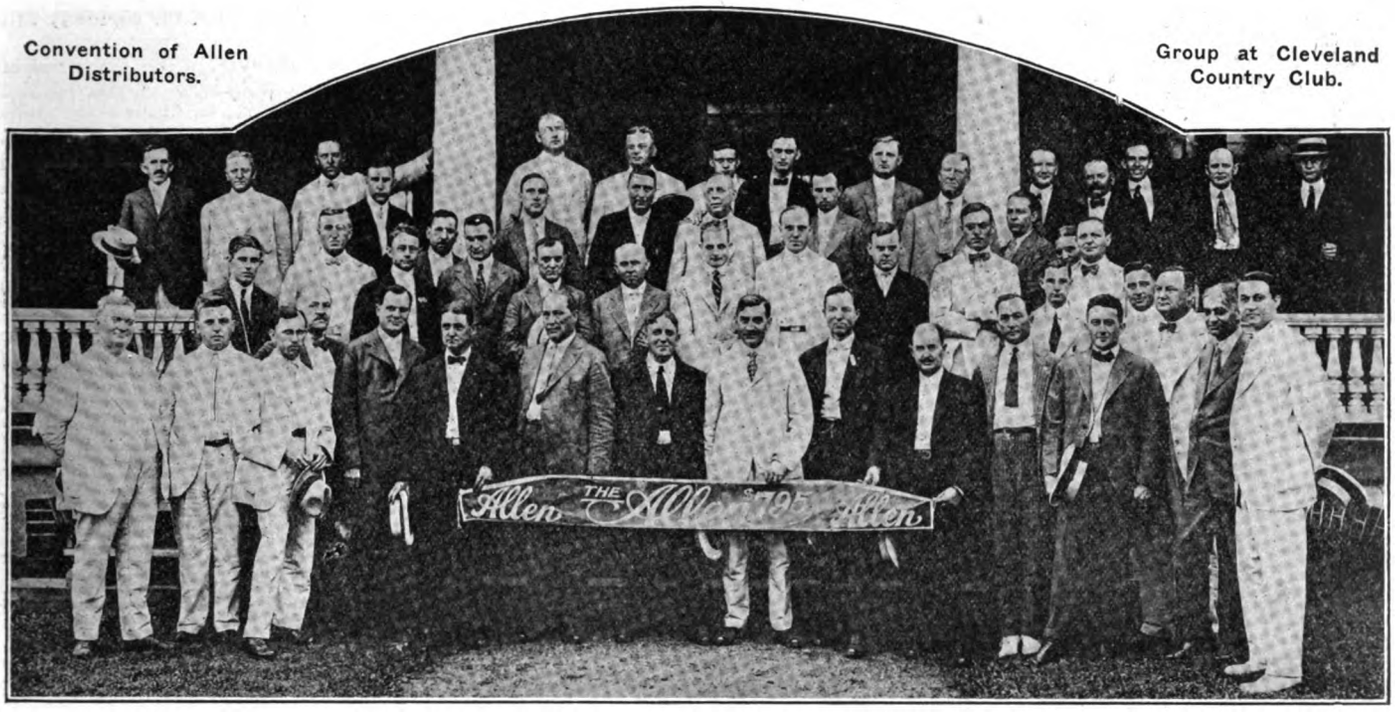
Convention of Allen Distributors.

Group at Cleveland Country Club.



HAPPENINGS AMONG THE CAR AND PARTS MAKERS.

The Allen Motor Company, Fostoria, O., recently entertained its various distributors at a four days' convention. The first day was spent at the Fostoria plant, where several important business meetings were held. After an automobile parade on the second day the visitors rode to Bucyrus to inspect plant No. three and attend a banquet as guests of the Bucyrus Chamber of Commerce. The next day the distributors breakfasted at the plant of the McGraw Tire and Rubber Company, at East Palestine, and then left for Cleveland to visit the city's show places and to banquet at the Cleveland Country Club. The fourth day was spent in recreation at Put-In-Bay. At the business meetings at Fostoria President W. O. Allen and his department heads and officers addressed the visitors on several important subjects.

The Jackson-Church-Wilcox Company, Saginaw, Mich., manufacturers of the Jacox steering gear, will build an addition to its plant on North Hamilton street. The new building will be of brick, one-story and 120 by 208 feet and will practically double the output of the concern. Employment will be given to 800 men in the enlarged plant, which will cover nearly two city blocks.

The Robinson Machine Company, Ecorse, Mich., has purchased a piece of ground west of Mill street, where a factory will be erected to manufacture its new Truckford, for converting a Ford car into a one-ton truck. The company will employ about 50 men.

The Sparks-Withington Company, Jackson, Mich., maker of the Sparton horn, will soon have the additions to the plants completed. This will practically double the size and production possibilities of the big factory. The new factory will be 70 by 334 feet, half being two stories and the rest one story. It is to be built of white brick and steel and will be modern in every way. The factory is working 24 hours a day.

The Daniels Motor Car Company, Reading, Penn., manufacturers of the Daniels eight, has increased its capital stock from $100,000 to $250,000.

The Peters & Heron Dash Company, Columbus, O., engaged in the manufacture of dashes and other vehicle parts, has sold its dash business to the McKinnon Dash Company of Buffalo, N. Y., and Troy, O., for the purpose of devoting its entire attention to the manufacture of dimmers, robes, top covers and other accessories.

The Buffalo Pressed Steel Company, Buffalo, N. Y., has leased the John R. Kiem mill property on Kensington avenue. This plat is particularly suited to the company's work and permits substantial expansion.

The Edward A. Cassidy Company, New York City, has completed arrangements with the F. W. Mann Company, Milford, Mass., to market the Kimball ball bearing automobile jack throughout the world on a long term exclusive sales contract. Plans are now under way for a rapid extension of manufacturing facilities and this will increase the production to an annual output of 150,000 Kimball jacks, and it is understood that still further extensions will be made as conditions warrant. The Kimball jack will be standard equipment on the Franklin car, the H. H. Franklin Manufacturing Company having contracted for 10,000.

The Four Wheel Drive Auto Company, Clintonville, Wis., manufacturers of the F. W. D. truck, has closed with Victor L. Phillips, Seventh and Delaware streets, Kansas City, Mo., to represent them in that territory.

The Moreland Motor Truck Company, Los Angeles, Cal., has announced a new model light delivery truck, the chassis to sell at $990. This is a 1500-pound capacity rapid service utility truck, equipped with Wisconsin motor, Timken axles and roller bearings, three-speed transmissions and with solid or pneumatic tires optional.

The Sulzberger & Sons Company, packers, which has developed a considerable business in Wilsons' sterilized curled hair for automobile upholstery, has changed its name to Wilson & Co. Thomas E. Wilson is the president. B. H. Blocksom continues in charge of the curled hair department.

The C. A. S. Products Company, Columbus, O., has incorporated with capital stock of $100,000 to manufacture the Foster gear. The company has enough orders to keep the plant busy until June, 1917. C. D. Cutting is president and general manager and A. W. Tyler secretary and superintendent. The plant has 50,000 square feet of floor space.

The Studebaker Corporation, Detroit, Mich., has awarded contracts for construction work that will add 40,000 square feet to the floor space of the Studebaker factories. An extra floor, 50 by 300 feet, is to be added to one of the three-story buildings which is at present used as a warehouse for materials. The new one-story building will be used in connection with final assembly work. The company also has authority to add to its railroad siding, which will be in the nature of double railroad platforms, each one-fourth of a mile long.

The Tay-Miller Manufacturing Company, Philadelphia, has increased its capital stock to $100,000, of a par value of $10 per share. The additional capital is to provide facilities to take care of the increased business in the company's patented Hand-1-Wash combination of water, soap and towel.

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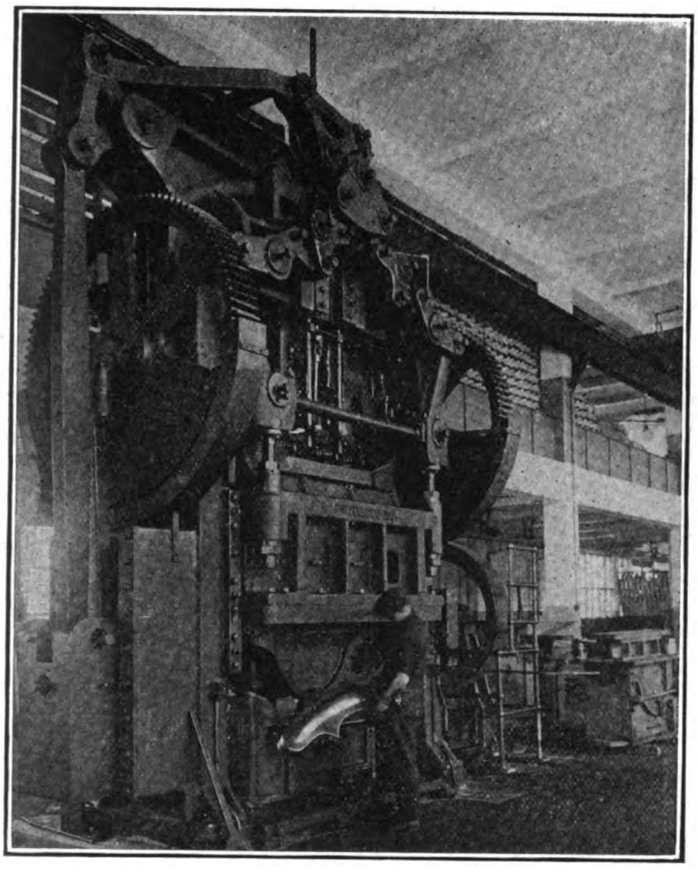


STAMPING OUT STEEL FENDERS.

The Toggle-Press Used by Dodge Brothers, in Stamping Out Its Double Crowned Fenders in One Operation—This Machine Cost $15,000 and Exerts a Pressure of 800,000 Pounds; It Weighs 400,000 Pounds and Is Driven by Two Motors. It Has a 96-Inch Die Space and Turns Out a Fender Every 60 Seconds.

The Oakland Motor Company, Pontiac, Mich., is planning to greatly expand its plant. Operations will begin as soon as the buildings on the old Studebaker site have been removed. Negotiations have been completed for the annexation of the block extending from Oakland avenue to Howard street, fronting on Baldwin. The new buildings will be occupied by the machine shop and additional assembly departments.

The Wayne Oil Tank and Pump Company, Fort Wayne, Ind., has increased its capital stock from $500,000 to $700,000. The object of the increase is to provide for big additions to the plant. Among the improvements will be the construction of a big factory building nearly 400 feet long.

The Monroe Company, Pontiac, Mich., has announced the erection of two new buildings, an office building and a pressed steel plant. The former will be a brick structure 28 by 56 feet. The greatest depth will be 82 feet. The capital stock of the company has been increased to $150,000.

The Perfection-Spring Service Company, Cleveland, O., will equip all the Shaw and the Yellow taxicabs in Chicago with the Perfection heater. The factory is already making shipments at the rate of several hundred each month.

The Cummins-Monitor Company, maker of two models of passenger cars, is gradually increasing its output. The concern is now turning out between six and 16 cars weekly, and the demand is constantly increasing.

The Gary Motor Truck Company, Gary, Ind., which is now manufacturing ¾-ton, one-ton, 1½-ton and two-ton trucks, will soon build a 3½-ton worm drive machine. The engineering department of the company is now working on the design, which will be known as the model K. It will be equipped with Buda motor and Sheldon axles.

The New Departure Manufacturing Company, Bristol, Conn., has acquired more land in the vicinity of the plant and will erect a four-story building 300 feet long. This new building will be known as the ball factory and is to be U shaped.

The Wichita Falls Motor Company, Wichita Falls, Tex., has increased its capital stock from $100,000 to $400,000. The company has met with much success in manufacturing motor trucks at its plant.

The Mayo-Skinner Manufacturing Company is successor to Mayo Manufacturing Company and will continue the manufacture of automobile supplies and accessories on an increased scale. The factory and offices will remain at 54-60 East 18th street, Chicago, until the new plant is completed and ready for occupancy. The personnel of the company will remain unchanged.

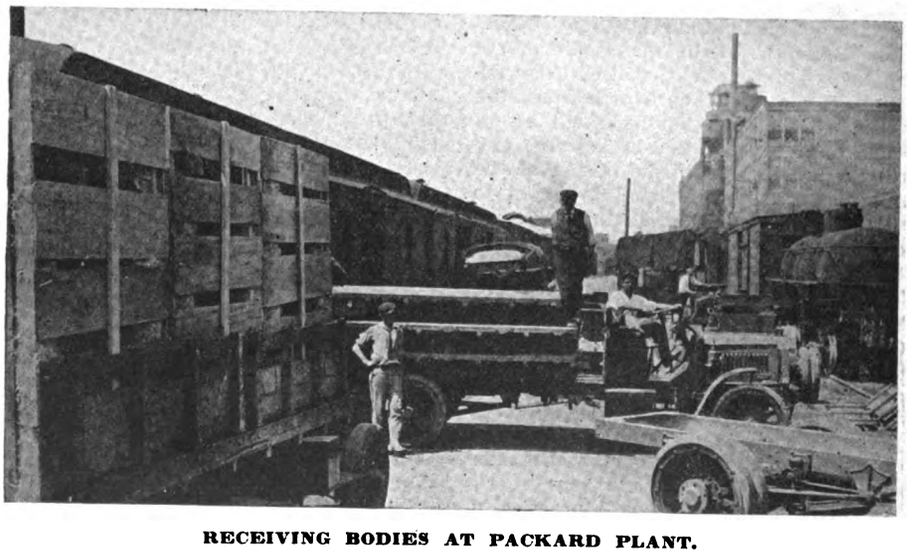
The Howe Manufacturing Company of Chicago, manufacturers of the Howe searchlight, has moved into new quarters. The new factory will have a capacity of 200,000 lamps during 1917 and contracts for material are now being let. The directors of the company are C. R. Howe, Edward F. Bessey, Philip R. Brand and J. L. Sugden.

The Velie Motor Company received an order from Kansas City, Mo., for fire apparatus which is claimed to be the largest order of the kind ever entered with a single firm. About 20 pieces of various types were purchased, combination hose and chemical cars, ladder trucks, service trucks, amounting to more than $100,000.

The Quick Action Ignition Company has been formed under Indiana state laws with a capital stock of $450,000 to take over the business, assets and liabilities of the Kocblock-Heideman Manufacturing Company of 908-16 East Sample street, South Bend, Ind.

The Silvex Company, Bethlehem, Penn., manufacturer of the Bethlehem spark plugs and shock absorbers, will build a one-story factory to cover an area 315 by 60 feet. There will be a basement extending 150 feet. The factory will have a capacity of 10,000 spark plugs per day and 10,000 shock absorbers per year, with sufficient floor space to increase the output 50 per cent. without enlarging the building.

The Cutler-Hammer Manufacturing Company, Milwaukee, Wis., has published a new edition of its automobile lighting switch booklet. The book states there are more than a million C-H switches in use on Packards, Overlands, Studebakers, Buicks, Detroit electric cars. The first page of the booklet shows several assemblies of C-H switches installed on some of the above cars. On another page a phantom view of the switch shows clearly the three-piece construction and the operating of the switch. The latter part of the booklet is devoted to wiring diagrams, which



RECEIVING BODIES AT PACKARD PLANT.

Showing How Truck Bodies, Made in Pennsylvania, Are Unloaded in the Receiving Yard of the Packard Motor Car Company at Detroit. The Platforms and Sides Are Knocked Down and Are Fitted to the Chassis at the Factory.

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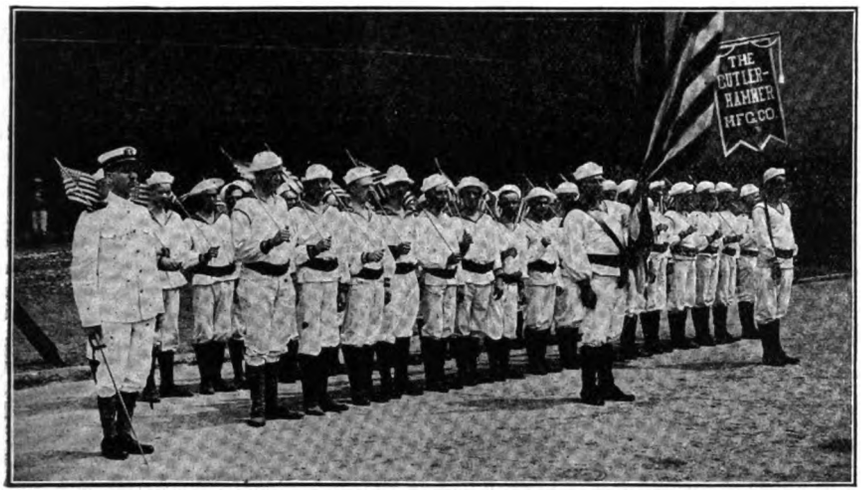


CUTLER-HAMMER FOR PREPAREDNESS.

About 1300 Employees of the Cutler-Hammer Manufacturing Company Took Part in the Recent Preparedness Parade in Milwaukee—There Were 30,000 Marchers in Line. Only 300 of the Total C-H Workmen Failed to Participate. President F. R. Bacon, Treasurer F. L. Pierce and General Manager A. W. Berresford, as Well as Other Executives, Paraded with the Men.

show the method of wiring for single lamps and various lighting combinations.

The Federal Motor Truck Company has issued its new "Blue Book of Traffic." In the 64 pages over 50 different lines of businesses are featured and in addition considerable space is devoted to detailed description of the various units and the construction of the Federal. The book is a comprehensive treatise on motor trucks and is very interesting to any lay man.

The H. H. Franklin Manufacturing Company, Syracuse, N. Y., has broken ground for an addition to its plant, which will give it 142,000 more square feet of space. This is the fourth factory addition in a year.

The Voss-Barbee Manufacturing Company, Little Rock, Ark, is adding to its stock a line of motor car accessories for jobbing purposes.

The Bosch Magneto Company, New York City, announces that it has signed contracts to supply the following concerns with Bosch magnetos: Mercer Automobile Company, Diamond T. Motor Car Company, Thomas Evarts Adams, Inc., Detroit-Wyandotte Motor Truck Company, Autocar Company, Rochester Carriage Company, Stegeman Motor Car Company, Republic Motor Truck Company.

The Morris, Russell & Co., Ltd., one of the big English importing and exporting houses of Curtain road, London, has just established a branch in New York, an action forced by the high war tariff and the prohibition of imports of automobiles and accessories in England. Among the prominent American manufacturers represented by the house are the K-W Ignition Company, the Livingston Radiator Company, the Champion Spark Plug Company, the Vichek Tool Company, American Asbestos Company, Kemco Electric Manufacturing Company, Perkins-Campbell Company and C. M. Hall Lamp Company. W. D. Williams, formerly of the Goodyear organization, has been appointed manager of the New York branch, which is located at 205 West 75th street, New York City.

The Bour-Davis Motor Car Company, Detroit, is bringing to completion a plant on West Fort and 23rd streets. The building is 200 by 130 feet and of four stories. This company has purchased a plot of ground at Kercheval avenue and the Belt Line and will erect a large factory, when the present plant will be utilized as a service station.

The Hayes Automobile Company, Kokomo, Ind., has started work on the sixth addition to its factory during the past year. This new building is a two-story structure to house the repair department and will bring the increase in floor space to 18,000 square feet.

The Steel Products Company, Cleveland, O., has obtained control of the Michigan Electric Welding Company, Detroit, and the Metal Welding Company, Cleveland, O., and the concerns will be consolidated under name of the Steel Products Company, with a capitalization of $4,000,000.

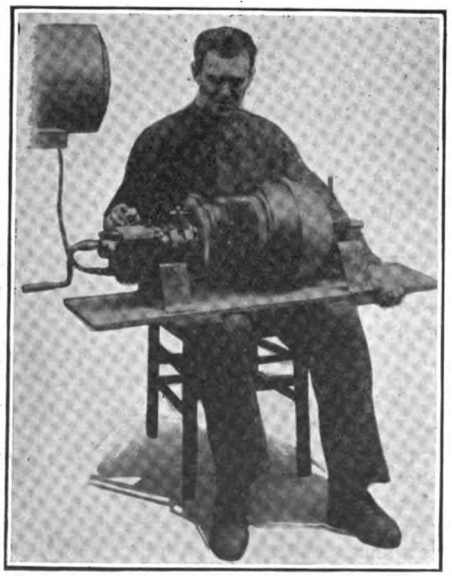
The Argo Motor Company, Jackson, Mich., is now the Hackett Motor Car Company. This was on account of Mansell Hackett entering the business. The car will be called the Hackett. The new four will sell for less than $1000.

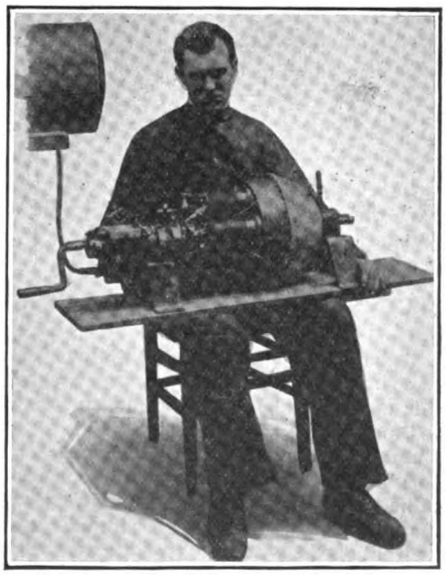
The Arrow Company, Springfield, Mass., is now located at Main and Park streets. The firm will handle Pierce-Arrow pleasure cars and trucks exclusively and will use the entire ground floor of the new building. It has been organized by Charles R. Culver, who has been in the automobile business for the past 15 years. He is vice president and general manager. The company will represent the Pierce-Arrow Company in Hampden, Hampshire and Franklin counties, and will cover all of Vermont except Bennington county.

H. J. Koehler S. G. Company, Newark, N. J., has issued a two-color wall hanger, which illustrates and describes the 1917 Koehler one-ton truck. This 1917 model is larger and more complete than the 1916 model, although listed at $895 for complete chassis, which is $45 less than the 1916 price.

The Universal Rim Company, Chicago, Ill., recently closed a contract with the W. K. Prudden Company, Lansing, Mich., by which the latter company will manufacture under the Baker patents for the next 10 years.

The Monarch Governor Company, Detroit, Mich., advises that the statement recently circulated in the trade and published in the July issue of the Accessory and Garage Journal to the effect that the Kramer Governor Company had changed its name to the "Monarch Governor Company," is to their knowledge incorrect. The Monarch Governor Company of Detroit is the exclusive selling agents for all governors manufactured by the Kramer Governor Company.





A REMARKABLE DEMONSTRATION.

At Left a View of a Macomber Five-Cylinder, 10-12 H. P. Macomber Rotary Engine at Rest, and at the Right a View of the Motor Operating at 1400 R. P. M., the Illustration Showing How Slight Is the Vibration in This Engine. The Motor Is Distributed by the Eagle Cycle Car Company, Chicago, to the Light and Cycle Car Trade.

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NATIONAL TRADE INFORMATION EXCHANGE.

Opportunities for Car and Accessory Manufacturers, Jobbers and Dealers which Have Been Reported from All Parts of the United States During the Past Month.

In this department subscribers are offered the opportunity to make known without cost to themselves those of their wants that pertain to the manufacture and distribution of motor vehicles. This service is free to all subscribers to the Accessory and Garage Journal and affords a medium whereby inquiry will have the largest possible circulation among trade interests. If it is desired, the identity of the inquirer will not be disclosed in these columns. Replies to such requests should be sent to this office with sufficient postage for forwarding.

Gasoline Pleasure Cars.

Bangor, Me.; The Brugan Company is in the market for gasoline pleasure cars; selling price, $400 to $1500.

Bangor, Me.; Herbert T. Friend, 40 Cumberland street and 96 Harlow, is interested in gasoline pleasure cars; selling price, $700 to $1200.

Nebraska City, Neb.; Warren T. Neihart is anxious to secure the agency for gasoline pleasure cars; selling price, $350 to $3000.

Omaha, Neb.; W. S. Barker wishes to obtain the agency for pleasure cars; selling price, $650 to $1200.

Lavina, Mont.; Lavina Garage (Earl Frye) is in the market for gasoline pleasure cars; selling price, $400 to $785.

Electric Pleasure Cars.

Nebraska City, Neb.; Warren T. Neihart is in the market for electric pleasure cars; selling at all prices.

Cyclecar Agencies.

Nebraska City, Neb.; Warren T. Neihart wishes to secure the agency for cyclecars; selling price, $500.

Accessories and Equipment.

Dubuque, Ia.; Overland Dubuque Company are interested in bumpers, greases, oils and special bodies for pleasure cars.

Bangor, Me.; Herbert T. Friend, 40 Cumberland street and 96 Harlow, wishes to obtain brushes, chains, cushions, gasoline, greases, lamps, leather, lubricators, maps, pans, patches, plugs, shims, soaps, switchboards, tape, tire accessories, waste and special bodies for commercial cars.

Boston, Mass.; E. R. Chapman, 44 Bloomfield street, is in the market for bumpers, cabinets, charging apparatus, chemical tanks, elevators, fire extinguishers, guards, turntables, washers and wash stands.

Brockton, Mass.; Nathan E. Packard, 221 Warren avenue, is anxious to secure air compressors, anti-rattlers, axles, bearings, belts, bolts, cable, camshafts, can, carburetors, celluloid, chains, charging apparatus, coils, commutators, cones, cups, drills, gaskets, graphite, horns, hubs, nuts, pedals, plugs, polishes, printed matter, races, radiators (truck), reamers, rims, screws, shock absorbers, springs, starters, timers, tire accessories, tires, tubing, valves (engine), wheels, wire and wrenches.

Lynn, Mass.; Levi C. Wade, 650 Summer street, wishes to secure arbor presses, autogenous welding equipment, bearings, bulbs, bumpers, carburetors, castings, coils, commutators, cylinder machines, dimmers, drills, dynamos, gear cutting machines, generators, grinders, headlights, horns, hose, hubs, ignition, indicators, jacks, lathes, machinery, magnetos, mechanical starters, mufflers, radiators, reamers, searchlights, shapers, shock absorbers, springs, starters and tire accessories.

Ada, Minn.; Union Motor Car Company is anxious to secure air compressors, bumpers, charging apparatus and oils.

Nebraska City, Neb.; Warren T. Neihart wants air compressors, air pumps, anti-rattlers, asbestos, axles, batteries, bearings, belts, bolts, brakes, brushes, bulbs, bumpers, burners, camshafts, carbide, carburetors, cases, celluloid, cements, chains, charging apparatus, clamps, clips, cloth, clutches, coils, collars, commutators, cones, connectors, controllers, cups, curtains, cushions, cylinder machines, cylinders, dimmers, discs, doors, drills, drums, dynamometers, dynamos, engines, fans, fenders, fire extinguishers, gaskets, gasoline, gauges, gears, generators, glass, goggles, graphite, greases, grinders, guards, guns, headlights, hoists, horns, hose, hubs, hydrometers, ignition, indicators, injectors, jacks, jigs, joints, lamps, lathes, leather, levers, locks, lubricators, magnetos, maps, mechanical starters, metal parts, meter, measuring instruments, motor controllers, motors, mufflers, nuts, odometers, oils, packing, paints, patches, pedals, pinions, pins, pistons, platinum, plugs, polishes, presses, primers, printed matter, pullers, pulleys, pumps, punches, purifiers, races, radiators, ratchet drills, reamers, rectifiers, regulators, removers (carbon), recording time clocks, rheostats, rims, rods, rubber, scrapers, screws, searchlights, seats, separators, shafting, shapers, shims, shock absorbers, soaps, sockets, solder, speedometers, spokes, springs, stampings, starters, steel, steering wheels, steps, storage systems, strainers, switchboards, switches, tanks, tape, terminals, testers, timers, tire accessories, tires, tools, tops and parts, transmissions, trimmings, trunks, tubing, upholstery, valves, vaporizers, varnishes, ventilators, vises, voltmeters, vulcanizers, washers, wash stands, waste, wearing apparel, wheels, whistles, windshields, wire, wrenches and special bodies for pleasure and commercial cars.

Allentown, Penn.; The Bee Automobile Company wants bodies, celluloid, charging apparatus, chemical tanks, lamps (head), leather, odometers, springs (cushion), steel and special bodies for commercial cars.

Branchville, S. C.; G. W. Reeves is interested in gasoline, polishes and searchlights. The goods are to be used for retail trade.

Spartanburg, S. C.; Overland Piedmont Co. is in the market for air compressors, air pumps, anvils, bumpers and fire extinguishers.

Winner, S. D.; W. H. Fulwider would like to secure arbor presses, autogenous welding equipment, belts, bulbs, bumpers, burners, carburetors, celluloid, chains, charging apparatus, coils, commutators, cones, cutters, drills, glass, hose, ignition, lamps, magnetos, pinions, pistons, platinum, radiators, rims, seats, speedometers, spokes, starters, tires, wheels, windshields and special bodies for pleasure cars.

Milwaukee, Wis.; The Pulley-Grip Company, 405 Broadway, desires to obtain belts, cements, fans, motors, pulleys and shaftings.

Special Opportunity.

Bangor, Me.; The Brugan Company would consider the agency for a good automobile in the territory of Bangor.

Bangor, Me.; Herbert T. Friend, 40 Cumberland street and 96 Harlow, is interested in accessories in Maine.

Representatives Wanted.

Springfield, Mass.; Walter M. Denman, Inc., 400 Dickinson street, wants representatives and dealers in Brockways throughout New England.

Bangor, Me.; The Brugan Company requires representatives in all towns.

Allentown, Penn.; The Bee Automobile Company wants representatives in Easton, Bangor and Bethlehem, Penn.

Gasoline Commercial Cars.

Lynn, Mass.; Levi C. Wade, 650 Summer street, is in the market for gasoline commercial cars; selling price, $500 to $2000.

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ACTIVITIES OF PROMINENT MEN OF THE INDUSTRY.

News Concerning Well-Known Members of the Motor Vehicle and Allied Industries.

C. H. King has joined the sales organization of the Chalmers Motor Company, his territory lying in the eastern part of the country. Mr. King has been identified with the Chalmers car for nearly 10 years and prior to that time was with the Motor Car Sales Company of New York City, agents for the Thomas-Detroit, which was the predecessor of the Chalmers.

Jay Hall has resigned as general sales manager and associate executive of the Olds Motor Works, with whom he spent the greater part of his career. Starting as salesman for the Oldsmobile distributor in Pittsburg years ago, he was appointed branch manager for the Olds Motor Works in Cleveland, opened a new branch in Pittsburg and finally became

E. Ver Linden, Olds.

C. H. King, Chalmers.

branch manager in Chicago. In 1913 he was appointed general sales manager and in 1914 he was made a member of the executive committee.

C. S. Hallowell has been elected to the vice presidency of the John O. Powers Company. Edgar Park is secretary.

Otis C. Friend has resigned as sales manager of the Mitchell Motor Company, Racine, Wis., to become vice president and general manager of the United Motors Company. He began nearly 20 years ago with the Chicago sales of the Locomobile steamer. He has been identified with the sales forces of the Chicago Mitchells, later becoming purchasing agent of the Mitchell-Lewis factory at Racine and then assistant factory manager, assistant sales manager and advertising manager.

E. Ver Linden is now general manager of the Olds Motor Works, Lansing, Mich. He was formerly manager and associate executive and has been in the automobile business many years. Before joining the Olds organization he was production expert for the Buick company, managing plant one.

E. H. Baker has been added as a field sales manager of the Cole Motor Car Company, Indianapolis. Mr. Baker has been president of the Cole Motor Company of Buffalo, N. Y., for a number of years. This change will cause him to become the active governor of sales in Western New York, Western Pennsylvania, West Virginia, Northeastern Ohio, Southern Michigan and the province of Ontario.

R. H. Collins has been elected a director of the General Motors Company, taking the place of Thomas Neal. Mr. Collins was formerly sales manager of the Buick Motor Company.

Fred Cardway, who has devoted much of his business life to promoting foreign trade between nations, will make a trip

Fred Cardway, Packard.

Resignations, Promotions and Other Changes in Personnel Recently Announced.

into South America in the interest of the Packard Motor Car Company and will take with him a Twin-Six and a chainless truck, as well as an expert driver and mechanic. The Packard company had received many applications from South American business men who wanted to establish Packard agencies there and Mr. Cardway will visit these men to ascertain their qualifications for undertaking the business.

C. C. Hinckley, chief engineer of the Chalmers Motor Company, has taken over the production department in addition to directing the engineering work of the company.

J. P. Winterson has been added to the sales organization of the Chalmers Motor Company. At different times he has been

J. P. Winterson, Chalmers.

connected with the Lozier Motor Company at the New York branch and was travelling salesman for the Chandler Motor Car Company, covering the entire country, excepting the Pacific coast.

W. C. Williams is now manager of the Cincinnati branch of the Robbins & Meyers Company, Springfield, O. G. H. Liebel, former manager, has resigned to devote his time to the Liebel Manufacturing Company, Cincinnati, of which he is now president and general manager.

Frank A. Sealand, manager of the Detroit branch of the Winton Motor Car Company for the last four and one-half years, has resigned to become general manager for T. H. Towle, proprietor of the Cleveland-Cadillac, the Columbus-Cadillac and the Toledo-Cadillac companies.

C. J. Cadwell has been appointed sales manager of the Miller Carburetor Sales Corporation, with headquarters at Los Angeles, Cal.

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Otis C. Friend, U. M. C.

F. X. Devlin has resigned as purchasing agent of the Federal Motor Truck Corporation, with which he has been connected since its formation six years ago.

L. R. Smith, Indianapolis, representative of Eisemann magnetos for several years, has resigned to become general sales manager for the motor department of the Buda company.

Howard E. Coffin, consulting engineer of the Hudson Motor Car Company, has sailed for Europe to spend a month in England and France investigating industrial and transportation conditions in those countries. Mr. Coffin is a member of the U. S. Naval Consulting Board and has taken a very active interest in motor transport of the government during the present year.

H. E. Merrithew, former vice president and general manager of the O & M Supply Company of Kansas City, has been appointed district manager by the Findeison & Kropf Company, manufacturers of the Rayfield carburetor.

Frank R. Kern, who has been connected with the export department of the Willys-Overland Company, has returned from Australia, where he is factory representative for the company, for a brief stay at the factory.

J. S. Keown, formerly assistant manager to Charles E. Fay, manager of the Ford Motor Car Company's branch in Boston, has been appointed manager of the branch at Albany, N. Y. E. H. Evans will take the place vacated by Mr. Keown.

J. E. Duffield has been appointed sales manager of the Brunswick Balke Collender Company, which will enter the automobile tire field with a complete line of tires, rubber parts and accessories for automobiles. Mr. Duffield resigned several months ago as western manager for the Thermoid Rubber Company. The tire business will be located at Muskegon, Mich.

J. W. Hawk has been placed in charge of the wholesale warehouse and parts distributing establishment opened by the Chalmers Motor Car Company at Salt Lake City, to take care of the intermountain territory.

R. W. Pharis is now manager of the International Tire Company, a retail concern at 187 East Gay street, Columbus, O. He was long connected with the Pharis Tire and Rubber Company as secretary and manager of the Columbus office.

P. J. Eubanks, sales and advertising manager of the Barley Manufacturing Company, Streator, Ill., has resigned.

W. H. Hennigan is now sales manager of the Paige Detroit agency in Boston, Mass. He formerly was connected with the Winton agency in Boston.

E. J. Parker has taken the position of general supervisor of the territory from Fort William to the western coast for the Chalmers Motor Company.

Paul Tobin, formerly sales manager of Central Illinois territory for the Detroit electric at Bloomington, has been transferred to Milwaukee, Wis., where he will occupy a similar position.

T. S. Dunn has been appointed general manager of the Cadillac Automobile

Howard E. Coffin, Hudson.

Company, Bloomington, Ill., and will have general supervision of the mechanical and storage departments, leaving T. K. Hayes, president of the company, to devote his entire time to the sales department. Mr. Dunn was formerly general manager of the Bloomington Coal Company.

George H. Matheson has become purchasing agent for the Weidely Motors Company. He was formerly connected with the Hayes Manufacturing Company and previous to that with the National Motor Vehicle Company.

E. E. Thompson is at present connected with the branch of the Maxwell Motor Company, San Francisco, Cal. In September he intends to return to Detroit to assume the duties of sales superintendent of the Maxwell Motor Company for the Pacific coast.

R. W. J. Hamill, general manager of the Packard Motor Car Company, announces additions to the Packard pleasure car selling force in Harry W. Gambrill, B. F. Baker and N. Reese Owens. Mr. Gambrill and Mr. Baker have achieved sales records with the Mar-Del department under Manager Lyman Bryan and will be city salesmen on Packards, while Mr. Owens will cover the outlying territory.

John Fitzgerald has taken a position as salesman for the new automobile firm, the Overland-Doyle Company. For the past two years he was connected with the Fargo mill.

R. F. Riffee, formerly factory manager for the Overland factory, is now manager for the Connell & McKone, Worcester distributors of the Overland and Willys-Knight, of the new sales rooms at 753-55 Main street. N. L. Broden will be sales manager.

Frank L. Newton has severed his connection with the Jackson Automobile Company to become general sales manager for the Lewis Spring and Axle Company, Chelsea, Mich., manufacturer of the Hollier eight.

Olin E. Davis, who won the 1913 Los Angeles to Phoenix road race in a Locomobile, and who has been identified with the motor car industry for several years, has joined the technical force of the Earl C. Anthony, Inc., Los Angeles, Cal.

C. C. Winningham has taken direct charge of advertising for the Hudson Motor Car Company, Detroit, following the resignation of W. L. Agnew. Mr. Winningham formerly was sales manager of the company and advertising had been a part of his department's work.

J. H. O'Brien, Detroit, has been appointed purchasing agent of the Ross Automobile Company. For the last several years he has been in charge of purchases and connected with the management of the Regal Motor Car Company. He was also connected with the Lozier Motor Company for many years.

H. A. Conlin has been promoted to field sales manager of the Federal Motor Truck Company. He was formerly special sales representative of the company.

W. C. Goodchild has been promoted to manager of the Boston branch of the Metz company. He was formerly branch manager in Providence, R. I.

C. C. Winningham, Hudson.

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Legal Responsibility for Damage As Between Manufacturer and Dealer.

By Elton J. Buckley.

THE law is becoming more and more firmly settled that a manufacturer who makes a machine, or a store appliance, or a food product, and sells it to a dealer to sell again, is liable to any purchaser who is injured by reason of some defect in its construction or manufacture. It used to be a theory—and there are some cases to support it—that where a manufacturer made something and sold it to a dealer, he was responsible only to the dealer, for the dealer was the only person with whom he had any contractual relations. If the product, whatever it was, was sold by the dealer to a consumer, and in the hands of the latter it went wrong, showing defective manufacture or construction, the consumer must look to the dealer for redress, because it was the dealer with whom the consumer dealt.

The courts soon awoke to the fact that this was a gross injustice, because it made a dealer responsible for something over which he had no possible control, and which he could not even know about, viz., the construction and composition of another man's product. The courts then began to decide that a manufacturer—who alone can know whether his product is good or not—should be held responsible for defective construction or composition in the hands of the ultimate consumer, no matter how many hands it had to pass through before it reached the ultimate consumer. This is, of course, as it should be, and nothing short of it would be fair.

The clearest decision on this point of law which I have ever seen has just been handed down by the New York Court of Appeals in a case involving an automobile. The manufacturer of the car sold it to a dealer, who sold it to a consumer. While the consumer was using it one of the wheels broke in a way that revealed defective construction, and some damage was done. The owner of the car did not bother with the dealer, but entered suit at once against the manufacturer. The lower court gave him a verdict, the manufacturer appealed, and the verdict was affirmed by the Court of Appeals. In its decision the court in a very few words summed up the responsibility of the manufacturer to ultimate consumers, as the weight of the law at present holds it. The following extracts from the decision are clear. I think I should say that the manufacturer defended first on the ground that he was responsible only to the dealer, and second on the ground that he bought the wheel from another manufacturer and therefore was not responsible anyway:

> The manufacturer of a finished product of machinery which is to be used without new tests and which in the nature of things is reasonably certain to place life and limb in peril, is under duty to make it carefully, and for a neglect to do so is liable to the owner who purchased it of a retail dealer. Such liability is not relieved by the fact that the manufacturer obtained the defective part of a reputable maker if a reasonable inspection would have disclosed the defect.
>
> From this survey of the decisions there thus emerges a definition of the duty of a manufacturer which enables us to measure this defendant's liability. Beyond all question the nature of an automobile gives warning of probable danger if its construction is defective. This automobile was designed to go 50 miles an hour. Unless the wheels were sound and strong, injury was almost certain. It was as much a thing of danger as a defective engine for a railroad. The defendant knew the danger. It knew also that the car would be used by persons other than the buyer. This was apparent from its size; there were seats for three persons. It was apparent also from the fact that the buyer was a dealer in cars, who bought to retail. The maker of this car supplied it for the use of purchasers from the dealer. The dealer was indeed the one person of whom it might be said with some approach to certainty that by him the car would not be used. Yet the defendant would have us say that he was the one person whom it was under a legal duty to protect. The law does not lead us to so inconsequent a conclusion.
>
> We think the defendant was not absolved from a duty of inspection because it bought the wheels from a reputable manufacturer. It was not merely a dealer in automobiles; it was a manufacturer of automobiles; it was responsible for the finished product; it was not at liberty to put the finished product on the market without subjecting the component parts to ordinary and simple tests.

This seems unanswerable, but one of the judges disagreed with it and filed a dissenting opinion on the ground that the manufacturer should not be held responsible to anybody but his immediate buyer.

The above extracts represent what would be considered the weight of the law, not only in the case of an automobile, but in the case of everything else that is sold by the manufacturer to dealers to be sold again. If they go wrong the dealer cannot be held responsible unless he has made the transaction his own by giving his own individual guarantee. I will discuss that presently. There are several companion cases on record in which suit was begun against the dealer instead of the manufacturer, and in which the court held that the responsibility was not the dealer's, as he could know no more about the construction of the article than the consumer. These cases, as well as the others of the type of the above automobile case, point directly back to the manufacturer, as they should do. They fix upon him the responsibility of warranting, either expressly or by implication, that his article is as it should be; that the wheels on his automobile are good enough to stand the strain; that the colors in his fabric will not fade unduly; that the steel in his farm implement are without flaw which inspection could discover; that the prepared beef in his tin is free from disease germs, and so on and so on.

But the whole situation is changed if the dealer gives a guarantee of his own. In that case he is just as responsible as the manufacturer and an injured consumer can sue him under his own guarantee. Many dealers are foolish enough to do this, but they always take a risk. No dealer should guarantee anything that he does not know absolutely about; his representation should be "the manufacturer's guarantee is so and so," and in all his literature and his advertising he should be particular to say "guaranteed by the manufacturer," never "we guarantee."

(Copyright, 1916, by Elton J. Buckley.)

There is great need among dealers, distributors and garagemen for practical and authoritative information upon such legal problems as arise in business every day; hence the inauguration of a legal department in this magazine. Mr. Buckley is a member of the bar in the state in which he is resident and is counted among the leading members of his profession. In addition to contributing a special article of general interest each month, he will answer any special question a subscriber may desire information upon, either by mail or through the columns of this department. It is essential that the inquirer sign his name to each inquiry, but only the initials or a pseudonym will be published. The service is free of charge to subscribers. Inquiries should be addressed to the Legal Department, Accessory and Garage Journal.

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PRACTICAL MOTOR CAR REPAIRS IN THE GARAGE.

CARE OF PLATINUM POINTS.
(Figure 1.)

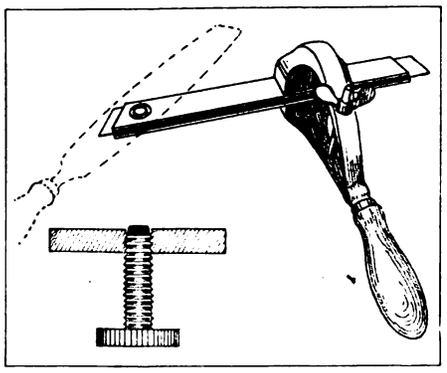
Although the design of the interrupter in the battery ignition system as fitted to the modern car is very much improved, it is inevitable that, after considerable use, some wear will take place, requiring a new adjustment to be made. At this time it is well to clean the points before resetting the adjustment, as these become more or less oxidized and fused from the heat of the small arc, which occurs when the circuit is broken, and also may wear slightly so that the surfaces are no longer flat.

In cleaning these surfaces with a very smooth file it is essential not only to work down to clean metal, but to true them up, so that the surface of the point on the adjusting screw is a perfect plane and perpendicular to the axis of the screw, and the rivet on the interrupter blade is a plane parallel to the surface of the blade. It is practically impossible to accomplish this if it is attempted to file the points while holding the parts in the hand.

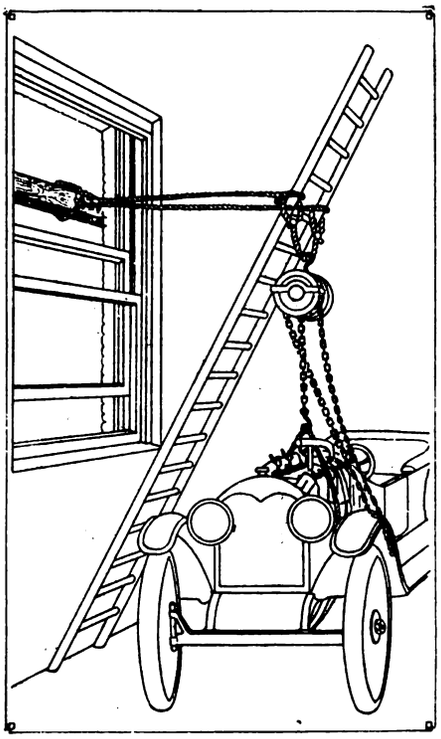
A set of simple "jigs" can be devised so that the job of cleaning the points can be done accurately and quickly. These are very easily made and the method of their use will be understood from the accompanying sketch.

The jig for the screw consists simply of a piece of brass or steel through which a hole has been drilled and tapped, the pitch of thread being the same as that of the screw. The screw is inserted in this so that the surface of the platinum point projects slightly above the surface of the jig, and the platinum is then filed down till it is flush with the latter. The jig may then be laid on a piece of very fine emery cloth and a very smooth, polished finish worked up on the point.

For the blade two strips of thin metal are used, between which the blade is clamped with a hand vice. Holes are drilled through these to accommodate the rivet, and the top strip should have the same thickness to which it is desired to dress down the platinum rivet. To determine what this thickness should be the height of the rivet should be gauged and then some allowance made for "finish," the amount of this allowance depending on how badly the rivet is pitted, or worn off to one side.



(Figure 1.)
Jigs for Cleaning Platinum Points.



(Figure 2.)
Substitute for Crane.

SUBSTITUTE FOR CRANE.
(Figure 2.)

When it is not practicable to use a portable garage crane or a block and tackle to remove an engine from a car chassis, a "jury" rigging may be improvised for the purpose. This is done by placing the foot of a ladder against a wall directly under an open window, the upper end projecting through it and being held secure by being lashed to two by four timber placed across the outside of the window. A differential, or ordinary three shieve falls, may then be suspended by means of a sling from the ladder and the engine easily lifted out. The sling should be wrapped around the sides of the ladder, rather than attached to the rungs, which are generally not strong enough to support the average motor.

An alternate method for use in narrow buildings would be to use two ladders, leaning them against opposite walls and placing a four by four beam across the rungs at a suitable height.

SECURING BRASS PIPE.

When replacing a broken brass pipe and it is necessary to cut the threads, the walls will be crushed unless one uses care during the operation. A satisfactory arrangement for securing the work is to use two small pieces of wood which have a hole bored in the line where they are joined together. The pipe is then placed between the vise jaws in the half-round holes and then clamped tightly in place. A little powdered resin sprinkled on the wooden members will prevent slipping.

LOCATING DEAD CENTRE.
(Figure 3.)

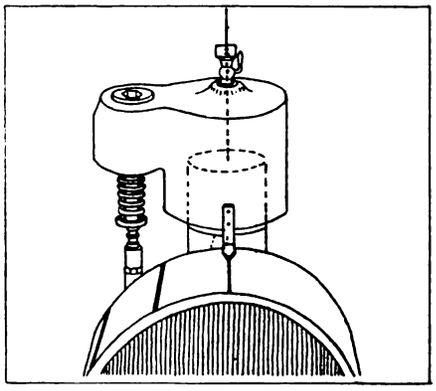
Since smooth operation of a gasoline motor calls for absolutely synchronous timing of the opening and closure of valves, it is customary to adjust these functions by reference to flywheel marks, in connection with a pointer or fixed mark on a stationary part of the motor.

If an owner has a car whose flywheel has not been marked by the maker and he wishes to make his own valve adjustments, as well as to be in a position to know if the ignition is properly timed, he will save time if he proceeds to lay out and scribe the necessary marks across the face of the wheel.

The first thing to do is to attach a pointer to the rear cylinder or, if the wheel runs close to some fixed part of the motor, scribe a vertical line on the stationary part, which will serve the same purpose. Contrive a simple depth gauge, consisting of a stiff wire, with a small piece of cardboard or wood with a saw cut in it, so that it can slide along the wire, but not slip too easily.

Raise the piston of No. 1 cylinder to its approximate dead centre and insert the depth gauge through the relief cock or spark plug hole, resting its bottom on the piston. Slide the adjustable marker down to about ⅛ inch of touching the top of the relief cock or top of the cylinder (the exact height is immaterial). With all relief cocks open so the flywheel will revolve easily, turn the wheel slowly to the right until the marker comes down and just touches the relief cock, or the top of the cylinder. Being careful to leave the wheel in this position, scribe a light mark across the face of the wheel opposite the pointer, using a pointed instrument and a try square. Now turn the wheel back in the opposite direction, passing dead centre until the marker again comes down and touches, when a second line should be made on the wheel opposite the pointer.

Now measure the distance between the two lines on the wheel. At a point exactly equidistant from the two lines scribe a well defined line across the wheel. When this mark is opposite the pointer, No. 1 piston is on its exact centre. The dead centre of other pistons may be located in the same way.



(Figure 3.)
Locating Dead Centre.

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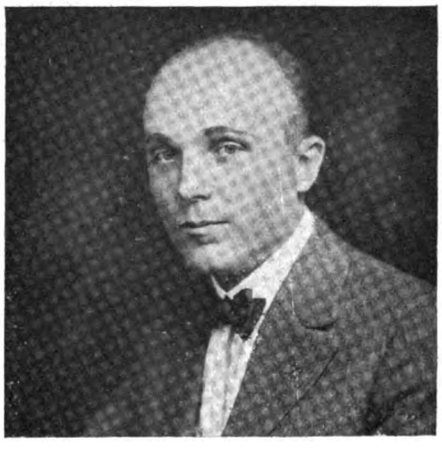
MYLE-MAYKERS FOR FORD CARS.

$100,000 Concern Incorporated in Illinois to Market New Automatic Fuel Device.

The Myle-Mayker company was recently incorporated in Illinois with capital of $100,000, for the purpose of marketing a device for Ford cars, known as the Myle-Mayker. Eugene F. Kline of Los Angeles is president of the company.

Eugene F. Kline, President of the Myle-Mayker Company.



Harvey Cory, Inventor of Myle-Mayker and Vice President of Company.

Mr. Kline was for many years connected with the Mahin Advertising Company of Chicago and resigned from the vice presidency of that company in 1909, since which time he has been engaged in the practise of law in Chicago and Los Angeles.

The Myle-Mayker is the invention of Harvey Cory, Long Beach, Cal., the organizer and former head of the Pittsburg Coal Washing Company. Mr. Kline purchased Mr. Cory's patent rights on a royalty basis, and Mr. Cory is vice president of the company. The Myle-Mayker, which is claimed to increase the mileage of any stock Ford car from three to 10 miles per gallon, or from 20 to 50 per cent. or more, is exceedingly simple. It can be attached very quickly to any stock Ford carburetor by anyone with pliers and a screw driver and can be removed in an equally short time without marring any portion of the car. The devise is based on an entirely new principle, on which Mr. Cory is claiming basic patents.

The Myle-Mayker is a gravity operated "flutter" valve, controlling the richness of the gas mixture in inverse ratio to the speed of the engine. There is only one moving part; a composition metal hinge or gate valve suspended at the top and filling a square space through which air passes. It is as silent as it is positive. At low engine speeds it remains suspended vertically, allowing enough air to pass underneath it to afford a rich mixture. This facilitates cranking and idling. As the motor is speeded, the suction of the engine pulls the valve in, allowing more air to enter carburetor, diluting the mixture. When gas is needed for a "cold" engine in the morning, a long, hard pull, or for slow running, the flutter valve remains partially closed, automatically enrichening the mixture. When the engine is running freely the flutter valve is lifted by engine suction, and the mixture is automatically thinned.

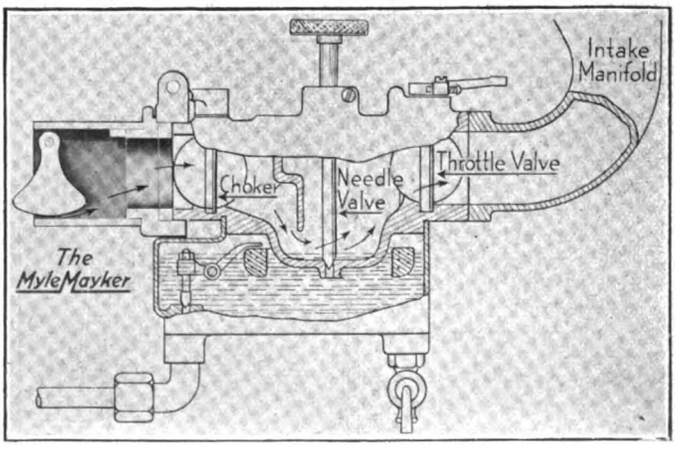
The Myle-Mayker does not in any way complicate the Ford carburetor; it becomes an integral part of the instrument. There are no adjustments, no springs, no valves, or screws. It retains the simplicity, but increases greatly the efficiency.

"We originally put the Myle-Mayker on the market in California," says Mr. Kline, "and its instantaneous success has led us to go into it on a very extensive scale. In our first 60 days we sold several thousand Myle-Maykers on a money back guarantee, without ever having a request for refund and without any general advertising. In view of the enormous number of Ford cars in operation now, we anticipate a very broad market and are making our plans accordingly. We placed orders last week for 25,000 feet of steel tubing, which will suffice for the manufacture of 175,000 of our Myle-Maykers. We expect to use this quantity within a few months of the inauguration of our advertising campaign, which we plan to begin on an extensive scale on or about Sept. 1. We intend to have our general offices in Chicago and distribute from that point, owing to its more central location, but our manufacturing will be done entirely in Southern California and probably in Long Beach."

Tests have been made of Fords equipped with Myle-Maykers along side of cars equipped with carburetors ranging from $15 to $30 in price. It is claimed that the car with the Myle-Mayker did each and everything the car with the more expensive carburetor did. On one occasion where an eight-cylinder car was involved in the test, the Myle-Mayker did all the "eight" could do except throttling down. The standard Ford touring car on which the Myle-Mayker was attached slowed down to 2½ miles per hour on high, the eight got down to two miles. Acceleration, speed and power were virtually the same.

Tests for heat have been made. Runs of hours in length in the hot sunshine at 92 degrees above, at a speed of 42 miles, was held for an hour and 30 minutes, still the water did not boil. Five miles of mountain road were travelled in low, yet no boiling. And on one run of 150 miles only one quart of water was used.

From five different Ford cars, each having gone over 3000 miles, the motor heads were taken off to find out about carbon. There was so slight a deposit the heads were replaced without removing that which had already formed. Spark plugs after 6000 miles use, averaging over 100 miles per day, have been examined and were found to be virtually free from any carbon or soot.



Sketch Shows Construction and Operating Principle of the Myle-Mayker.

BEARINGS SERVICE COMPANY.

The formation of the Bearings Service Company, with general offices in Detroit, has been announced. A. K. Hebner, former service supervisor of the Hyatt Roller Bearing Company, has been placed in charge as general manager.

The company will take over the service departments of the Timken Roller Bearing Company, Canton, O.; the Hyatt Roller Bearing Company, Newark, N. J., and the New Departure Manufacturing Company, Bristol, Conn., and is an entirely separate organization from these three concerns. The idea is to maintain in each automobile centre in the United States a union service station where a complete stock of these standard types of bearings will be at the disposal of car owners, to expedite service.

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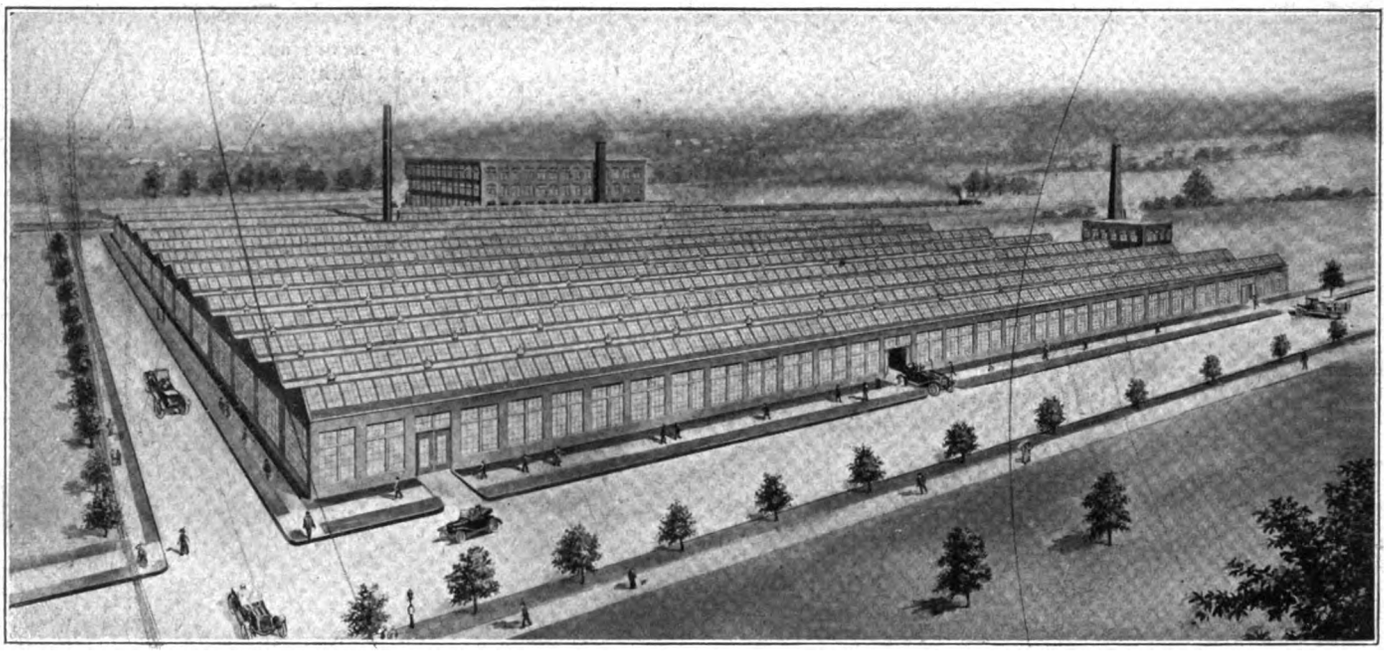


NEW ENGLAND'S LARGEST AUTOMOBILE PLANT.

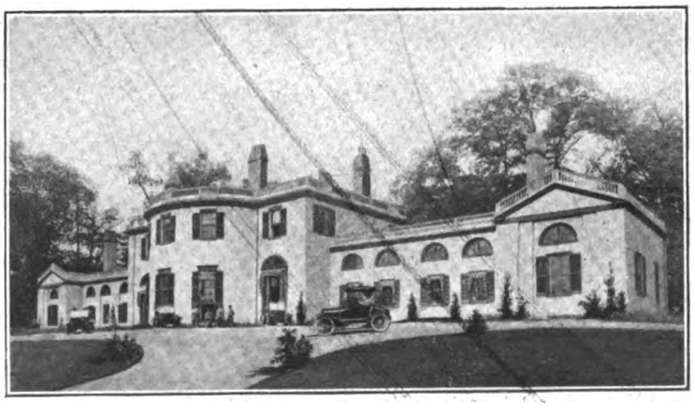
NEW ENGLAND'S largest automobile manufacturing plant, that of the Metz company of Waltham, Mass., which produces the well known Metz gearless pleasure and commercial cars, is rapidly expanding, making this section of the country as well known to automobilists as is the Middle West.

Thousands of Metz cars have been in use in New England for years, but the car was not as well known in other sections of the country until this year, when the shipment of train loads of Metz cars throughout the country proved to the manufacturers that the gearless transmission was not only standing the test and proving itself thoroughly efficient, but that the many users were spreading broadcast the fact of this satisfaction. These satisfied and enthusiastic drivers of Metz cars proved powerful selling agents, heralding its merits wherever they went, with the results that inquiries have come into the factory from remote sections.

The Waltham factory, which is the most complete in the United States, manufacturing more of the parts that enter into the construction of the car than any other American car manufacturer, is working at full capacity to meet the enormous demand for Metz cars, over 100 of which are being turned out daily. With this output the factory is in a position to make immediate deliveries, but at the present rate of increase in sales an enlargement of the plant for increased production facilities will be made necessary before another year.

The Gray & Davis starting and lighting system, which is standard equipment on the Metz, and the Goodrich tires, with which it comes equipped, are practically the only parts of the completed car not manufactured in the Waltham factory. The extent to which manufacturers go in giving their product an individual stamp is shown in the fact that even the lumber which is used in making the bodies is secured from the Metz company's timber lands in Vermont. By controlling all the manufacturing processes that go to make up the car, the manufacturer is sure of the quality of materials in both the raw and finished state.

Charles H. Metz, Founder of the Metz Company.



Administration Building of the Metz Company, and at Top of Page the Governor Gore Plant, Where Bodies Are Mounted on Cars and Made Ready for Shipment.

The enormous Metz plant, which is located on a site of 137 acres, is in four units, not including the administration or office building, and is under the direct supervision of Charles H. Metz, the founder and president of the company, who developed the car bearing his name into its present state of perfection. The principles on which Mr. Metz created his great enterprise are exceedingly interesting, as the Metz car is different from all the others in that it has a gearless transmission.

In his own words, a description of these principles take on additional interest. He says: "Since the day the first Metz moved with ease and sureness, there has been a steady increase in the number of people who realize that gearless transmission is not a mechanical experiment, but is nature's own method of transmission sanely applied to the automobile. If people would stop using the term 'friction drive' and call it instead 'pressure drive,' they would hit the nail right on the head, for that is exactly what gearless transmission is; it is same principle as drive wheels of the steam locomotive on a smooth track.

"Pressure, or in other words, the weight of the engine, is what prevents the wheels from spinning on the

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1917 METZ

TOURING CAR
ROADSTER

The Dawn of a New Era
In Motor Car
Values

$545
Complete
Electric Lights
and
Starter

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METZ 1917 touring cars and roadsters represent the most phenomenal car value ever offered.

A "Master" car embodying all the constructional features that are recognized by engineers to be good and desirable in design, material, workmanship and finish.

Combining the necessary essentials, quality with the greatest utility and handsome appearance. METZ equipment is complete—Nothing is lacking—Nothing more can be desired to make the 1917 METZ the perfect car for every service, everywhere.

1917 METZ TOURING CAR AND ROADSTER FACTS.

Gray and Davis Electric Lighting and Starting System; Famous METZ Gearless Transmission, Affording Seven Speeds; Dixie Magneto; Streamline Body; One Man Top; Full Elliptic Springs, Front and Rear, with Extra Shock Absorbers; 108 Inch Wheelbase; Low Center of Gravity, Making the 1917 METZ the Easiest Riding Car Produced; Extremely Simple Construction; Deep Cushion Upholstery; Weight 1950 pounds—Great Gasoline, Oil and Tire Mileage. Price, Including Complete Equipment, $545, f. o. b. Waltham, Massachusetts. Dealers Specifications on Fourth Page.

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METZ dealers can give a hundred reasons for the slogan "Match This Car If You Can," a slogan that indicates why METZ sales have jumped from several hundred cars a year to more than 30,000, and why METZ sales in 1917 will break all records.

To dealers who desire to sell METZ Quality, METZ Utility and METZ Satisfaction, and a car that fits into any surroundings, we now offer a lasting business opportunity that must appeal to all progressive dealers—a proposition backed by a car that insures large sales and large net profits.

The detailed specifications on the following page will surprise, interest and convince you that the slogan "Match This Car If You Can," is well applied to this distinctive car.

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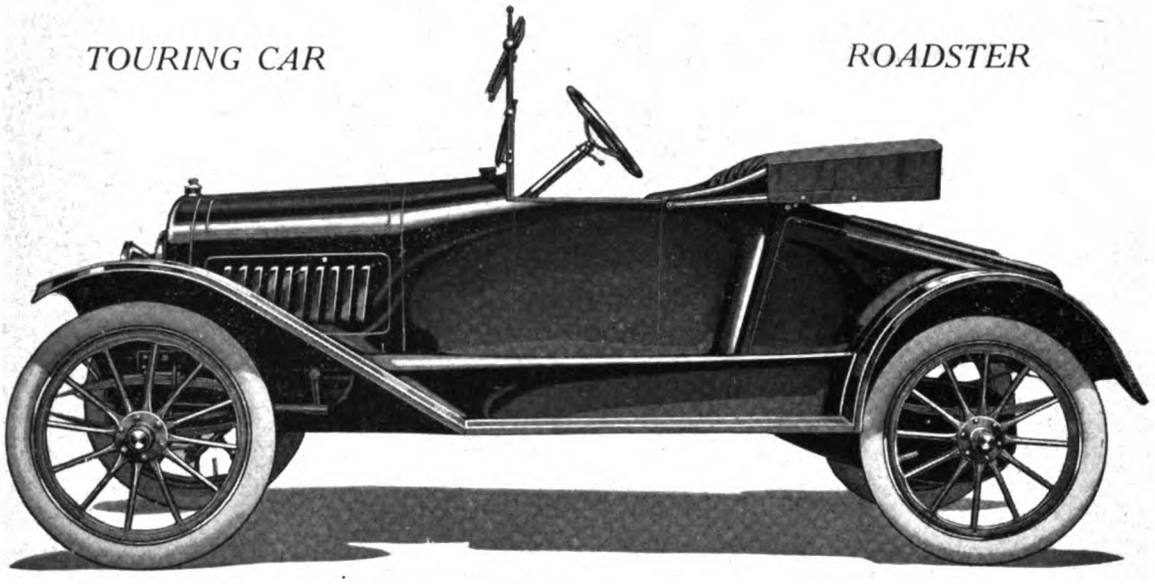
1917 METZ

TOURING CAR ROADSTER



The 1917 Metz cars are built to meet the most exacting demands of discriminating buyers——those who know car values and can be satisfied only with a car of distinctive appearance and appointments, that affords riding comfort, high mechanical efficiency and complete equipment, combined with lowest cost of operation and upkeep.

The recognized efficiency of the Metz cars that made the winning of the last Glidden Tour possible is only the basis of the sterling qualities, power, flexibility, stability, endurance and refinement that are found in the 1917 Metz models.

DETAILED SPECIFICATIONS

STANDARD METZ CHASSIS—contains three units: (1) an improved motor of our own manufacture; (2) the famous METZ gearless transmission; (3) rear axle and differential, driven by wide, flat, silent chain completely enclosed, running in grease.

MOTOR—compact METZ 25 horsepower, four-cylinder, water-cooled.

CYLINDERS—cast en-bloc, with ample water jackets and valve chambers. Pistons ground, fitted with four ground rings. Castings for cylinders, pistons, etc., made from specially high-grade gray iron and steel mixture.

CRANK SHAFT—Made of fine grade of steel, specially heat treated to insure the greatest degree of strength. Supported on three main bearings of liberal dimensions.

VALVES—Mechanically operated, and interchangeable. Positively lubricated cam shaft enclosed within crank case. Inlet and exhaust valves on right side of cylinders.

CRANK CASE—Upper half is carried on two steel channel sections, bolted to main frame. Bottom section is an oil well, easily removable for inspection. Crank shaft bearings are held to upper portion between these two sections.

CARBURETOR—A. W. T., float feed, automatic regulation for motor-speeds.

GASOLINE SUPPLY—Built into cowl; gasoline is fed by gravity direct to carburetor. Capacity, ten gallons.

IGNITION—This is one of the most important items in the equipment of a motor car, and in adopting the Dixie high tension system installed in the METZ we have been guided solely by considerations of efficiency, regardless of cost.

LUBRICATION—Our constant level splash oiling system is the best that has ever been installed in a motor. More oil than is necessary is at all times supplied, but the overflow level permits it to return to reservoir; thus a constant supply of cool, fresh oil is assured.

STARTING AND LIGHTING—In the Gray & Davis two-unit system we have an instrument with sufficient torque to turn the motor in the coldest weather, and the generator supplies the batteries with sufficient current to allow for frequent starting and ample reserve for brilliant lighting.

WHEEL BASE—108 inches. Tread, standard, 56 inches.

WHEELS—Standard artillery wheels, 32 inches, clincher type, using 3½-inch tires. Standard color vermilion, with option of white or royal blue; can supply wire wheels at no extra cost when so ordered. Demountable wheel equipment $15 net extra.

TIRES—Goodrich 32x3½-inch Standard clincher type.

TRANSMISSION—The oldest form of power transmission in the world. The FAMOUS METZ GEARLESS transmission, special alloy driving plate and fibre-ring driving wheel, thus a speed for every need; seven different forward speeds and reverse, eliminating all gear and clutch troubles; an absolutely flexible transmission.

DRIVE—Left-hand drive, centre control.

BRAKES—Two powerful brakes are provided: one external contracting, and one internal expanding, in addition to reverse on transmission.

WINDSHIELD—Built-in, rain vision, adjustable for rain and ventilation, especially designed for the car.

TOP—Instant one-man top, arranged so that when in use it fits down over the windshield frame in a tight joint. Provided with close-fitting storm curtains and cover slip.

UPHOLSTERY—Heavy tufted upholstery and deep cushions, padded with genuine hair, using the famous Fabrikoid—better than leather.

GASOLINE GAUGE—Always in easy view from driver's seat.

EQUIPMENT—A. W. T. Speedometer, Automatic Signal Horn (very effective), Horn, Jack, Tools, Tire Irons, etc., Instrument Board, Electric Light, Special Tool Box in rear (very accessible), License Bracket, Pockets in tonneau doors.

FINISH—Beautiful heavy coated black enamel, several coats baked on, hard, glossy and very durable, with vermilion colored wheels, artillery type.

WEIGHT—Ready for the road without gasoline and water supply, 1950 lbs.

PRICE—Completely equipped, $545, Roadster or Touring Models, F. O. B. Waltham, Mass.

METZ COMPANY, WALTHAM, MASS.

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track and is what makes it possible for these big, heavy engines to haul enormous loads up steep grades without loss of power. It is the pressure of the driving disc against the driven fibre grip wheel that moves the Metz in the same sure way, without loss of power. There is no doubt about this type of transmission being practical, for not only its makers, but thousands of present owners are daily demonstrating this fact. That it is exceptional we admit, but then the gearless Metz is exceptional in every part of its equipment."

The success of the great enterprise was built up on the principle of the gearless transmission. According to a well known automobile engineer this system has many advantages, some of which, as he expresses them in the order of their importance, are:

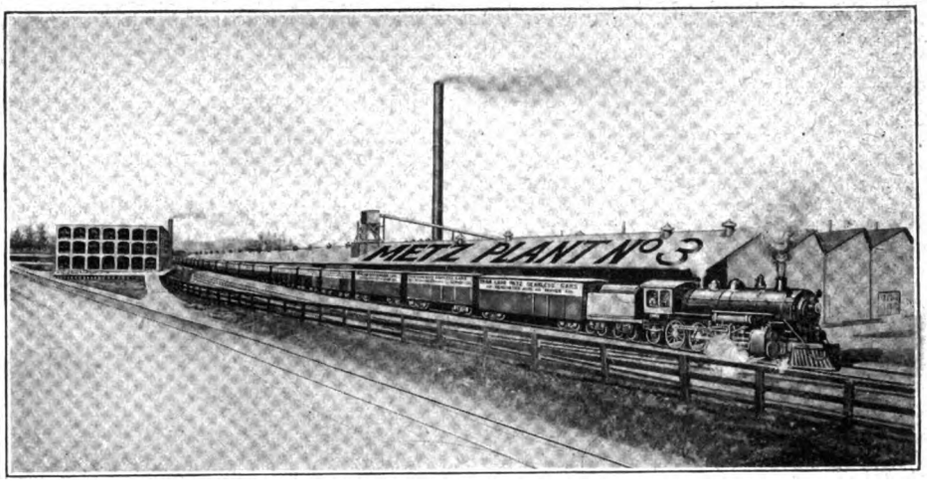
"First—It provides a means of speed reduction and torque increase, which is, practically speaking, infinitely variable or adjustable as to the co-relation of the driving and driven shafts, making it possible when overcoming abnormal tractive resistance or hill climbing to proportion the load to the power of the motor, so that the latter always turns at its most efficient speed.

"Second—Constant torque feature. When change of driving ratio is required, this is brought about gradually, smoothly and quietly, without interrupting the application of power to the wheels and with single controlling movement in place of the several co-ordinating operations with conventional transmissions.

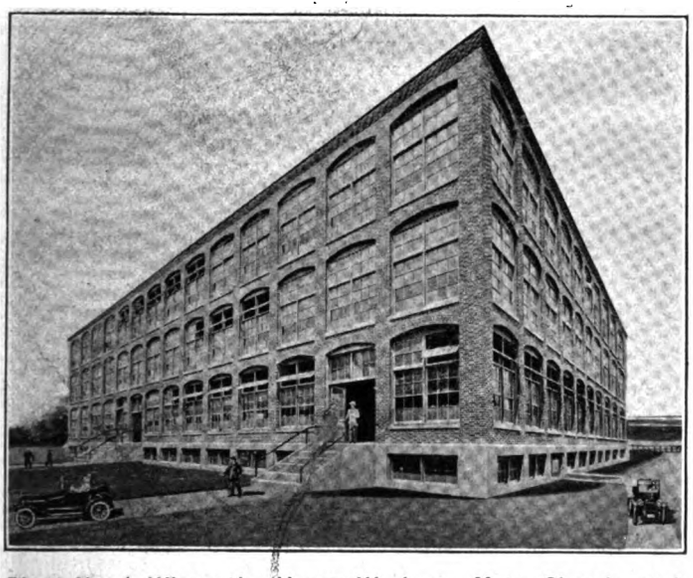
"Third—Elimination of abnormal strains in terminal drive, tires, etc., consequent upon ordinary clutch action.

"Fourth—Simplicity, lightness and economy in cost of maintenance."

Sales Director R. A. Pickens, who is at the head of the big Metz sales organization, which stretches from coast to coast, has extended this department by developing a staff of state sales managers who will work in connection with dealers and sub-dealers throughout the country. Mr. Pickens' organization has been breaking records right along. Last May was the largest month in the history of the Metz plant.



The Metz Company's Shipping Department Plant No. 3, Showing a Train Load of Metz Cars Destined for the West.

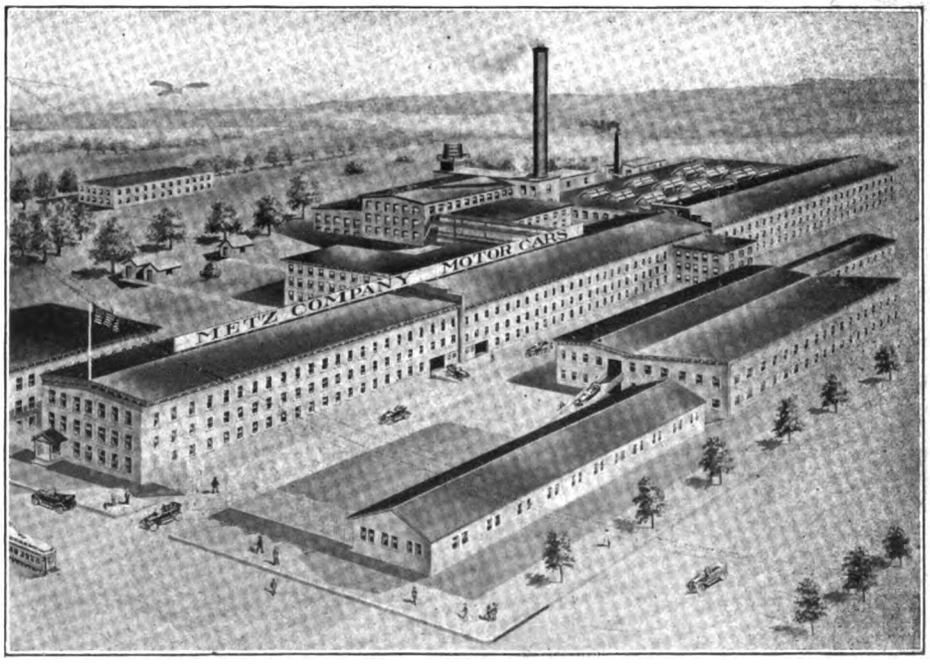


Plant No. 4, Where the Heavy Work on Metz Chassis and Bodies Is Performed.

Simplicity, economy, durability and completeness are represented to the last degree in the Metz car. They not only average more than 20 miles to a gallon of gasoline, but are economical on tires, the gearless transmission preventing the sharp abrasive shocks from reaching the treads when the car is started or accelerated. For the same reason the motor is longer lived and keeps in better working order, as it does not have to withstand the shocks from sudden starting or in shifting gears as on the gear driven cars.

The smaller parts of the car are manufactured in Plant No. 1 and the chassis is also assembled there. The chassis is fitted with temporary wheels and taken over a 25-mile road test by the testers, after which it is driven to Plant No. 4, or the Governor Gore plant, where it is placed on a moveable platform and fitted with a body, new wheels, windshield, top and other equipment. Plant No. 2 is devoted almost entirely to the upholstering department, where the cushions, tops, etc., are made, and Plant No. 3 is the shipping department.

Both Metz pleasure and commercial cars have won enviable reputations. They are equipped with 25 horsepower water cooled motors that are simple in construction, all parts being very accessible. Both types are noted for their low operating cost, as well as selling price, and are in use in all parts of the country.



Plant No. 1, Where Small Parts Are Manufactured and Metz Chassis Is Assembled.

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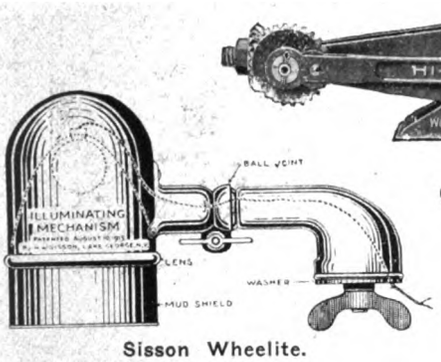
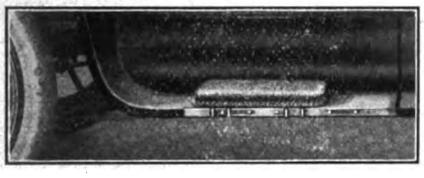
GARAGE EQUIPMENT AND CAR ACCESSORIES.

SISSON'S WHEELITE.

Sisson's wheelite attaches to the left mud guard and illuminates the left front wheel so that its location is made known to the operator of an approaching car. The lamp is very small, but so arranged as to provide a flood of light on the wheel. It is protected from mud by its peculiar shape and a mud shield, so it cannot be clogged or dimmed in the worst going.



Sisson Wheelite.



Bantam Running Board Mat.

As a trouble light this lamp is very useful, as it can be swung on the ball joint, or quickly detached and a lead used to carry it to any part of the car. All sockets and connections are standard.

The maker advises the use of the device shown with small bolt attaching through the guard, as the contacting flange is well padded and will not mar the finish. A clamp bracket, also padded and adjustable to any style of guard, is optional with the purchaser.

Manufactured by H. W. Sisson, Lake George, N. Y. List price, $5.

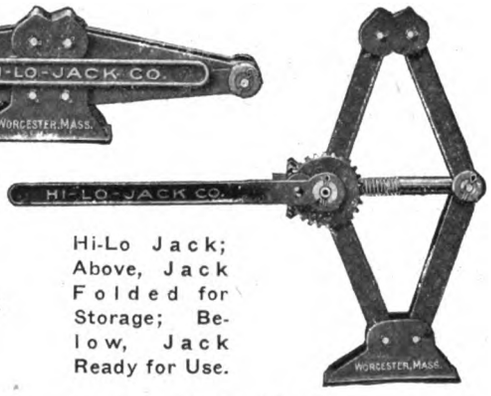
RUNNING BOARD MAT.

The Bantam automobile running board mat insures sure footing when entering or leaving the car and freedom from dirt, mud or slush from the inside. It is made of the best grade fibre and the clamps are of spring steel. When required it may be instantly removed, cleaned and replaced. Their installation is said to add to the neat appearance of any car.

Manufactured by the Bantam Manufacturing Company, 64 Pearl street, Boston, Mass. Made in two grades, one selling at $4 per pair and the other at $3 per pair.

HI-LO-JACK.

The distinguishing feature of the Hi-Lo-Jack is the use of the toggle joint principle, which has long been known as the simplest method of applying power. It can be slipped under the lowest axle made and will start lifting at five inches and raise its load to 17 or 19 inches. The higher the lift the stronger it grows, the increase being at the rate of 2000 pounds to every inch of lift. Its remarkable power is due to the use of a horizontal screw, a special large sized ball thrust, which eliminates friction and assures easy operation, and because the handle is always central with the travel of the jack. The horizontal screw also prevents the jack releasing its load unexpectedly, this operation being wholly under control of the operator. The auto jack comes in sizes for cars weighing 2500 pounds or under and for cars of 3000 pounds or over. The small truck jack is for trucks from 1500 to 6000 pounds, and the large truck jack for vehicles up to 12,000 pounds.



Hi-Lo Jack; Above, Jack Folded for Storage; Below, Jack Ready for Use.

Manufactured by the Hi-Lo-Jack Company, 140 Green street, Worcester, Mass., and sold under a strong guarantee covering a period of one year. Write for prices.

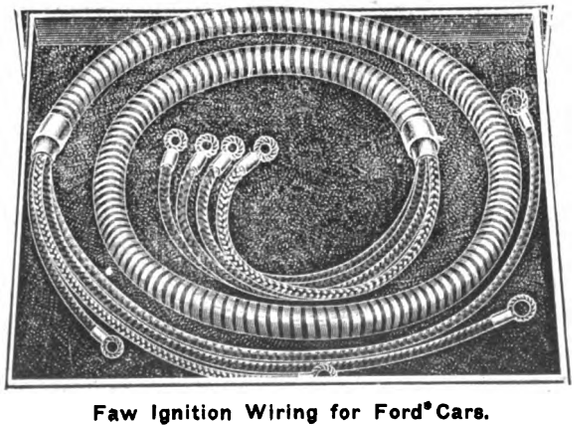
FAW'S NEW IGNITION WIRING.

A valuable improvement has been made in the Faw ignition wiring assembly for Ford cars, a metal ferrule, which is not subject to deterioration nor effected by heat or oil, having been substituted for the former rubber end pieces on the flexible tubing. The metal ferrule is so arranged that when threaded on to the flexible metal tubing the ribs of the latter form a compressed thread, which clips the ferrules tightly in position and also prevents grease and oil from getting into primary wire tubing.

Another innovation is the use of a self-made soldered ring at both ends of the primary wires, the ring being formed of the wire conductor itself; the insulation is protected at the ends by polished brass ferrules and the entire wire and terminals forming one piece.

The Faw ignition wiring assembly is also made in five wires, one being to take care of the lighting circuit on the models of Ford cars provided with electric headlights.

Distributed by J. H. Faw, Inc., 41 Warren street, New York City. List price of the ignition assembly for four primary wires, 80 cents; the four secondary wires, 40 cents; the five-wire assembly, $1.

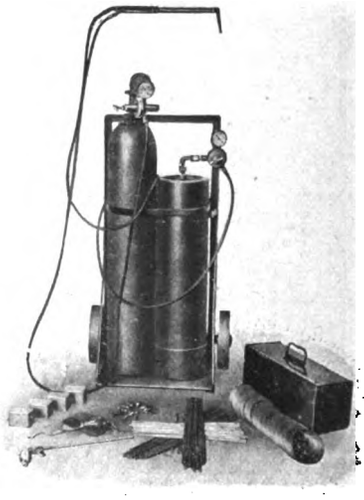


Faw Ignition Wiring for Ford Cars.

DYER WELDING OUTFIT.

As a profit maker in a garage welding equipment stands in the fore ranks. There is practically no limit in its range of work, and by its use work can be done more expeditiously and cheaply and with uniform high grade results. On this page is shown the Dyer style A combined welding and carbon removing outfit. This equipment includes a double gauge oxygen regulator for reading tank consumption and contents, a single gauge acetylene regulator, one standard style B torch with 10 tips 0 to nine, one carbon removing gun, one pair of goggles, two 10-foot lengths of hose with all connections, one Presto tank adapter, fluxes for brass, steel, cast iron and aluminum, steel welding wire and three sizes of cast iron sticks, aluminum sticks, one steel carrying case with lock and a truck on which the apparatus can be wheeled to any part of the building. The carbon removing attachment will be found to be one of the most valuable features of the equipment, it allowing a workman to clean either a two or four-cycle engine in from two to five minutes, according to the size and condition. It can also be used for cleaning mufflers.

Manufactured by the G. H. Dyer Company, 155 Brookline street, Cambridge, Mass. Write for prices.



Dyer Style A Welding and Carbon Removing Outfit with Truck.

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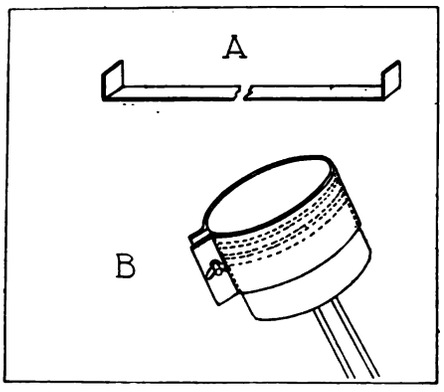


(Figure 4.)
Piston Ring Compressor.

PISTON RING COMPRESSOR.
(Figure 4.)

Herewith is shown an easily made tool for compressing the piston rings so that the piston can be inserted into the cylinder. It consists of a strip of 3/32 inch sheet tin or zinc of about 15 inches in length and 2½ inches in width. About an inch from the ends the metal should be bent at right angles as at A. Next bend the strip in a perfect circular shape so that the two flat ends register. Drill a small hole through the ends and insert a small bolt and thumb nut. The operation is simple. The compressor is tightened around the rings and the piston pressed into the cylinder. The compressor contacts with the edge of the cylinder, thus allowing the compressed rings to be pushed out of the tool and into the cylinder. The complete assembly is shown at B.

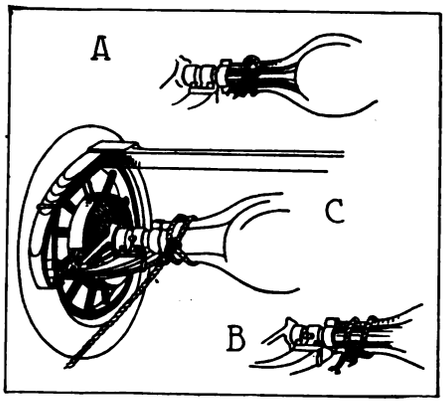
PROTECTING CELLULOID.

Some pleasure cars and many commercial vehicles are not equipped with glass windshields, but are fitted with a curtain having a celluloid window. For the purpose of obtaining a clear vision at night and in stormy weather, it appears to be the custom for many drivers to cut a small opening.

Unless the greatest care is exercised in cutting these holes, the material is apt to tear easily, especially when rolled up and fastened to the top. Some fit a leather binding around the edges of the aperture and cement it to the celluloid. Another method is to cut a ring shaped strip of celluloid and attach it around the opening. This is accomplished by preparing a solution consisting of one dram of fine shredded celluloid dissolved in two ounces of acetate of amyl. This will produce a thick, sirupy mixture and should be applied with a camel's hair brush. Thoroughly clean the material to be joined. Allow the parts to dry for several hours before using.

ATTACHING TOW LINES.
(Figure 5.)

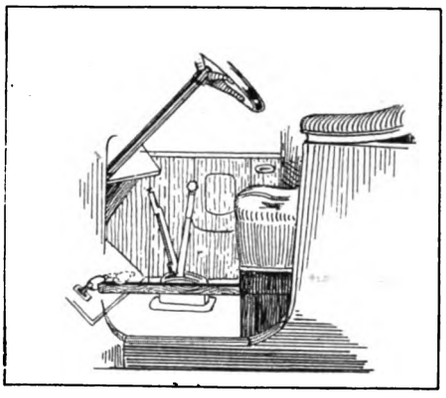
Attaching a manila rope sling to a rear axle for the purpose of towing with a steel tow line would seem to admit of a number of different ways in which to fasten the sling. According to authorities, however, there is only one correct method if one is to obtain the maximum of service from the sling, and this is shown at C in sketch. Unless the rope is properly arranged there will be a tendency to rapid wear. Two incorrect attachments are shown at A and B.



(Figure 5.)
Attaching Tow Lines.

LUBRICATING CLUTCH LEATHERS.
(Figure 6.)

The best method of applying castor or neats foot oil so that it will soak into the clutch leather as it should, is to brace the clutch pedal so as to hold out the clutch for several hours. This can be done by inserting a stick or metal bar between the pedal and the front of the driver's seat and of sufficient length to keep the pedal depressed to the fullest extent. The clutch spring will hold the stick in position. The oil should be applied evenly by means of a stiff feather, hack saw blade or thin blade of wood. Let it stand over night, with the clutch out. On some cars this treatment will work a wonderful improvement.



(Figure 6.)
Lubricating Clutch Leather.

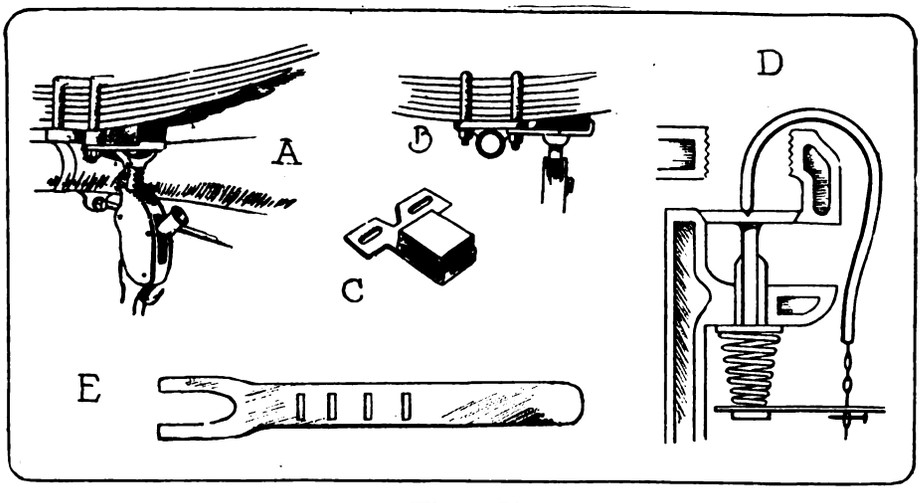
USING JACK UNDER LIVE AXLES.
(Figure 7 A, B, C.)

When it is difficult to jack up the rear wheels because there is not sufficient clearance or a convenient place to apply the upward thrust, the suggestion in the accompanying sketch will be found of value. The device simply consists of a hard wood wedge, or filler, held in place under the spring by a sheet metal clip having two holes which permit its attachment to the rear spring clip. One or two short wood screws could be used to fasten the wood to the metal plate to prevent the wedge working out, the screw heads being let into countersunk holes in the plate. A piece of solid rubber, cut from a solid tire, might be substituted for the wood wedge.

MAKING A VALVE LIFTER.
(Figure 7 D and E.)

The valve lifter shown herewith is simple and may be made up at trifling cost. Both its construction and method of use will be easily understood from the sketch. The large hook is bent up from a piece of stiff steel wire, about No. four gauge, with its lower extremity bent into an eye to accommodate the chain. The forked bar is made of flat stock, about 3/16 inch thick, and has its ends dressed down almost to a chisel edge. A series of three or four holes (which may be round) permits adaption to different degrees of overhang of the valve chamber. A small wire nail completes the outfit.

An experienced repair man advises that one of the best methods for cleaning out the radiator and cooling system of the car is by the use of sal ammoniac solution. He states that it will remove all incrustations. Allow the fluid to remain in the system and operate the car for a few days, after which flush the system with clean water.



(Figure 7.)
Using Jack Under Live Axle (A, B, C) and Making a Valve Lifter (D, E).

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Accessories and Equipment

OLD ROMAN SOLDER.

Old Roman solder makes it unnecessary for the motorist to carry a complete soldering outfit in his car; the composition takes its place in that class of repair work. In garages it is an exceedingly efficient and handy article to have around. It comes packed in tubes and when coated on the work to be repaired almost instantly hardens by contact with the air, or with hot or cold water. Heat or acids are not required in the operation. This substance is adaptable to all kinds of mending, in fact, the manufacturer declares it will "mend anything but a broken reputation." This composition has been in use for many years and has given uniform satisfaction. It has been found to be a ready seller.

Manufactured by the Sole Manufacturing Company, 148 Chambers street, New York City. Write for prices and free literature describing the range of repairs possible.

DISCO ELECTRIC SYSTEM.

In addition to making electric starting and lighting systems as standard equipment for 18 large American car manufacturers, the maker of the Disco systems, which include one-unit and two-unit types, is producing a special outfit for Ford cars. This system is a single unit, simple, light and compact, operating on a 12-volt current, which insures a start every time. Chain breakage is prevented and perfect alignment is maintained by the use of a special patented yoke bracket for a mounting. The system is easily accessible itself, and does not interfere with access to the Ford engine. The maker has an interesting proposition to make to dealers, owners, jobbers and manufacturers, and in assigning territory is giving preference to early inquirers.

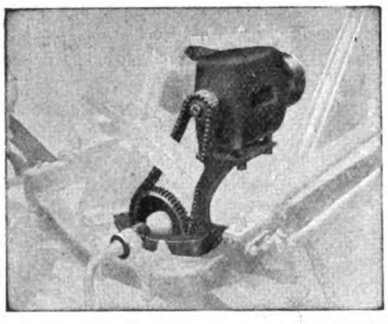
Manufactured by the Disco Electric Starter Corporation, Detroit, Mich. Write for prices and proposition.

UNIVERSAL TEST CLIP.

The Universal test clip can be attached instantly to the storage battery for charging purposes. It is made of steel and is lead plated for protection against acid fumes; it is practically indestructable, will carry 20 amperes without burning and has wide jaws provided with sharp teeth that bite through any corrosion on the binding post. This clip is exceedingly valuable equipment and wide publicity is being given it through an extensive and continuous advertising campaigns.

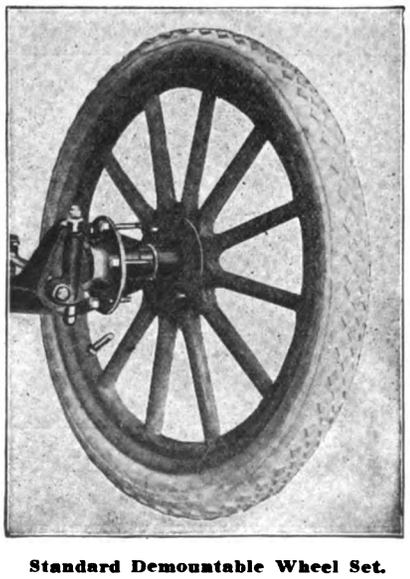
Marketed by R. S. Mueller & Co., 431 High avenue, S. E., Cleveland, O. List price, 15 cents each; in lots of 10, 12½ cents; in lots of 100, 10 cents. Write for trade discounts.

At Left: Old Roman Solder; Above, C-Cleer.



Disco Starting and Lighting System for Ford Cars.

Universal Test Clip.



Standard Demountable Wheel Set.

C-CLEER.

C-Cleer is a paste which when rubbed over the glass of the windshield makes it impossible for rain, snow, fog or moisture of any kind to adhere and obstruct the vision of the driver, even during a violent storm. It is being used widely and is giving satisfaction. In the accompanying illustration is seen a "silent salesman" containing cans of C-Cleer, which proves a very attractive sales help in any garage or accessory store. This manufacturer carries on a consistent and comprehensive advertising campaign and lends every aid to distributors.

Manufactured by the Sole Manufacturing Company, 148 Chambers street, New York City. Retail price, 25 cents a can. Write for dealer proposition.

DEMOUNTABLE WHEEL SET.

The Standard demountable wheel set is designed to equip the regular Ford car wheels so that the owner can change the wheel instead of the tire simply by loosening four bolts and replacing the wheel with a spare wheel on which a tire is already mounted. The set consists of four special steel plates that are attached to the insides of the wheels on the car, and the necessary bolts and an extra wheel. It is obvious that this arrangement simplifies the matter of changing tires and is a convenience that every Ford owner will appreciate. A comprehensive national advertising campaign is in progress.

Manufactured by the Standard Auto Accessory Company, Leipsic, O. List price for the set complete $12. Jobbers and dealers are requested to write for special proposition.

TRUMP PISTON RINGS.

Trump multiple piston rings are designed to conserve power and prevent carbonization in all kinds of internal combustion engines. They are composed of three sections, each having equal resiliency and expansion, and when assembled form a whole that gives uniform pressure at all points on the inner wall of the cylinder. The three openings of the unit are equally spaced and provide

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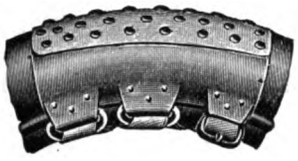
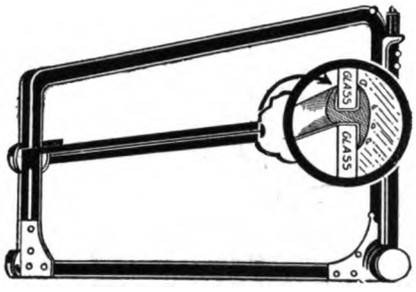
Woodworth Tire Cover.



Woodworth Light Strap Boot.

Trump Piston Ring.



McCormick Weather Strip Fitted.

Method of Mounting Twin Rim.

an impassable barrier to gas and compression. While fitting one Trump ring to a cylinder will materially improve compression, the maker advises the use of three, so as to overcome all unequal wear that may result from using the eccentric ring. All standard sizes are carried in stock ready for immediate shipment. Special sizes can be made to order at reasonable prices.

Manufactured by the Trump Manufacturing Company, Crown Point, Ind. Write for free descriptive booklet and price list.

TWIN-RIMS.

Twin-Rims are demountable rims for Ford cars and any other that has 30 by 3½ or 30 by three-inch clincher rims. They are separate steel rims for carrying spare tires to be slipped on beside the wheel on which a tire has become unserviceable, so as to avoid the necessity of changing tires on the road. The Twin-Rim fastens to the rim of the wheel and performs the functions of a spare wheel. It is strong and durable and does not detract from the appearance of a car. The maker's guarantee states that this device may be tried out for 30 days and if it is found unsatisfactory it may be returned and the purchase price will be refunded. Twin-Rims are so easily attached that any one can mount them in a very short time.

Marketed by the Twin-Rim Company, Inc., 103 Massachusetts avenue, Boston, Mass. List price, $5. A special rack for display purposes is priced at $2. Write for trade discount and dealer proposition.

WAYNE GASOLINE PUMP.

A new design of the Wayne sidewalk gasoline pump, shown herewith, embodies several improvements. The most radical departure from conventional design is the substitution of a telescopic housing for the usual hinged door, thus economizing space and securing entirely waterproof construction. An interesting feature is the 20 gallon register, plainly visible from the street side and permitting the purchaser of gas to see what is being delivered by the pump.

A pointer atached to the plunger traverses a vertical scale which is calibrated for fractions of a gallon so that if pumping is stopped at any stage of the stroke, the exact amount delivered is indicated. A quantity stop regulator makes it possible to limit the stroke to deliver one, two or three quarts, and a cumulative meter shows the gross quantity handled. One of the most useful improvements is the suction valve in the base of the pump, where it is easily accessible, in addition to the usual foot valve at the bottom of the tank. The pump is supplied either with or without electric light at the top.

Manufactured by the Wayne Oil Tank & Pump Company, Fort Wayne, Ind. Write for the company's illustrated literature and prices.

Wayne Gasoline Pump.

McCORMICK WEATHER STRIP.

The McCormick weather strip is designed to fit the upper edge of glass on the lower section of a windshield, fitting tightly against the glass, thereby deflecting rain, hail and sleet over the strip so that the water will trickle to the ground. As the glass comes into a vertical position the single flange, or lip, is forced tight against the forward (outside) face of the upper glass, making the connection water tight between the panes. The strip is equally tight when placed with the lip on the inside, allowing the upper glass to swing freely. The weather strip is very easily adjusted by a light pressure of the thumb and is easy to remove and can be coiled and placed in the pocket on the car door. The device is guaranteed to give satisfaction.

Manufactured by the Robinson Manufacturing Company, Lincoln building, Louisville, Ky. Retail price, $1. Write for dealer proposition.

WOODWORTH TIRE ACCESSORIES.

Two of the several Woodworth tire accessories now on the market are shown on this page, a light strap tire boot and a steel studded tire cover, both of which are made of one-ply leather throughout its width, the leather having been waterproofed by the Woodworth process so that they always remain flexible. The strap tire boot is designed for use on weak or blown out tires, and is made to be either hooked, laced or strapped on to the tire. It is studded on the wearing surface with steel studs, which makes for durability.

The Woodworth tire cover is a steel studded protector that, placed on a tire, protects it from all external injury, lengthens its life and provides a non-skid that is always in place. These covers, as is the case with all Woodworth devices, do not, according to the positive assertion of the maker, deteriorate with age and are not injured by contact with oil, as is rubber. The complete line of tire accessories is described in detail in the maker's catalogue, which will be sent free to inquirers.

Manufactured by the Leather Tire Goods Company, Niagara Falls, Ont., Canada. Write for prices and discounts.

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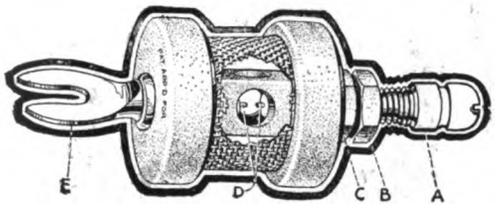
P-S-E PLUG ENERGIZER.

The P-S-E plug energizer is a highly scientific attachment for the cylinders of any internal combustion motor, such as



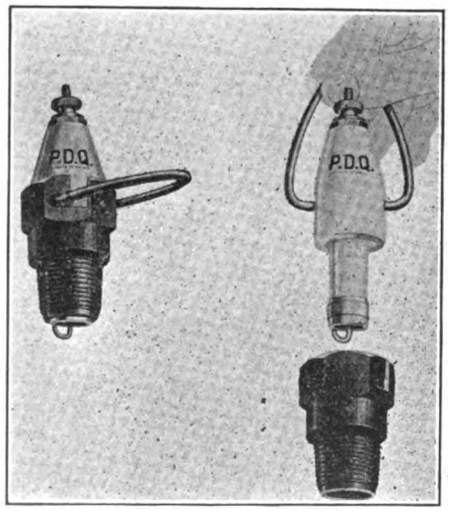
P-S-E Spark Plug Energizer.

is used in motor vehicles, for the purpose of breaking, or gapping, the electric current on its way to the electrode in order to obtain increased power and flexibility, noticeable economy, a visible spark at the plug, a reduction of wear and tear of parts, and the positive prevention of spark plug troubles. The device is shown in the accompanying illustration. It is adjustable and quickly fitted to any ignition system by simply screwing it down on the plug and fastening the terminal between the nuts at the other end. The contact points are made of a metal that can neither burn nor oxydize, and the end caps and inner core are of non-conducting composition to ensure durability and prevent current leakage. Ventilation to prevent oxydization of the points is effected by means of a wire gauze. The maker has published a very interesting and highly instructive description of the device, as well as of the causes of the troubles which it is designed to overcome. It is free upon request.

Manufactured by the P. S. E. Manufacturing Company, 158 West 50th street, New York, N. Y. Price $1 each.

P. D. Q. SPARK PLUG.

In the P. D. Q. spark plug the body and insulator are two separate units, it being possible to remove the insulator



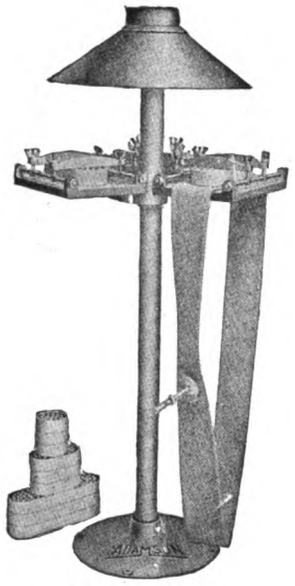
P. D. Q. Spark Plug.

from the shell without the use of tools by simply pulling up on the bail, thereby releasing the eccentric action on the shell. A convex ground seat in the shell is forced with great pressure against a ground surface on the porcelain, making the joint leak proof and removing the necessity of using a gasket. Severe tests have demonstrated that the plug cannot leak compression, according to the maker. The quick detachable feature makes for ease in priming the motor in cold weather and for ease of cleaning, for both electrodes are carried in the insulator. As regards economy, the porcelains may be purchased separately, which are procurable at about 25 per cent. lower cost than the original complete plugs.

Manufactured by the Wolverine Spark Plug Company, Detroit, Mich. Prices quoted by the maker upon request.

ADAMSON VULCANIZER.

The Adamson model "H" vulcanizer illustrated herewith is especially designed for the repair of inner tubes. Three tubes can be accommodated at one time and gasoline is used as a fuel to produce the necessary heat for curing



Adamson Vulcanizer.

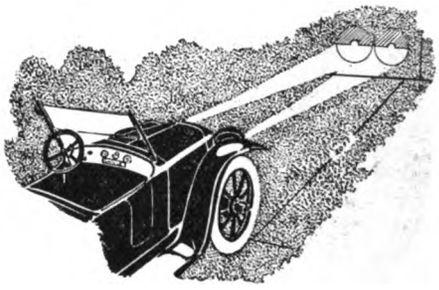
the rubber. It is placed in the vulcanizing cups and ignited and further attention is not required. A hood is provided to carry off the fumes through a five-inch stove pipe, which may be attached at the top.

Three sets of vulcanizing cups are supplied with this outfit, each set consisting of a 3½, 6, 9 and 12-inch cup. The bottom faces of the cups are polished and slightly concave, which prevents the gum from flowing and makes for exceptional work. Statement is made that a perfect repair can be produced within 15 to 20 minutes.

Manufactured by the Adamson Manufacturing Company, East Palestine, O. List price of complete outfit, including one-half pound of repair gum, $36.

FRACTO.

Fracto is a glass shield that regulates the blinding rays of headlights by directing them upon the reflector so that the full efficiency of the lamps may be obtained to illumine the roadway as required by law. It does not destroy the majority of upward rays but corrects their projection by focusing them upon the road. Fracto has two foci, one for projecting and the other for a local field



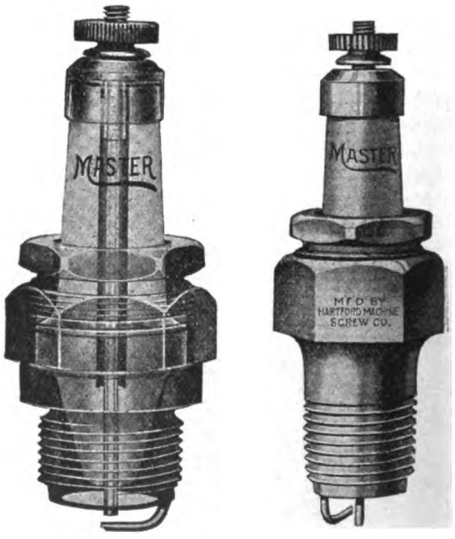
Projection of Light by the Fracto.

of illumination. The top half of the reflector can project a powerful light about 400 feet, while the lower spreads the rays at a distance of 10 feet and at a width of two feet. The maker guarantees the Fracto, when properly adjusted, will bring the rays from the headlight within legal requirements.

Manufactured by the Fracto Specialty Company, 356 Newbury street, Boston, Mass. Price $2.75 per pair.

MASTER SPARK PLUGS.

The highest achievement in spark plug construction is said to be incorporated in the Master calorite spark plugs. Their cores have ample provision for expansion and contraction and the manufacturer declares that they are unbreakable. A further guarantee against injury is that only the best grade of imported porcelain is used. A few qualities of the Master plugs which are worthy of mention are as follows: They will not carbonize or short circuit; they will always fire regardless of an over abundance of oil; they will produce a hot, fat spark on a weak circuit, and they will not leak compression. The plugs are adapted to all types of motors,



Master Spark Plugs.

including those used in racing cars. A generally accepted guarantee of their high merits is that the government has adopted them exclusively for the navy department.

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Manufactured by the Hartford Machine Screw Company, 508 Capitol avenue, Hartford, Conn. List price of regular length plug $1; extra length and Ford model, $1.25 each.

EASY BUILT RACKS.

Easy built tire racks are designed to enable the dealer to carry a large number of tires in stock and in a manner that will afford the maximum of display. The dealer can easily build a rack that will carry 75 casings in assorted sizes, buying a half dozen brackets from the maker mentioned below and the piping from a junk dealer. They are easily installed and the whole unit can be moved without much trouble.

Manufactured by the Elgin Motor Power Manufacturing Company, Cedar Rapids, Ia. Price of brackets only $9 per dozen.

SPRING BUMPER.

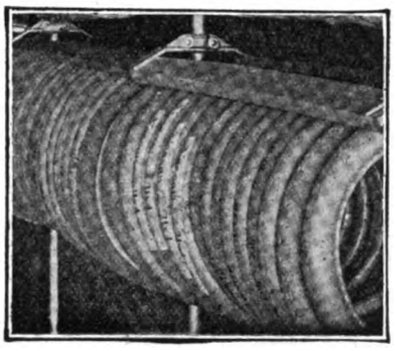
In these days of increasing traffic, it is becoming necessary for all automobiles to be equipped with devices that will afford the greatest safety in case of accidental bumping. One of the cheapest and strongest bumpers on the market is the Bull Dog spring bumper, illustrated herewith. It is made to fit all makes of cars and can be attached at the front or the rear. Statement is made that this bumper will harmonize nicely with the streamline body of the finest make of car. No drilling into the frame is required and all attaching connections are universal and fit all cars.

The guard rails, for all cars except the Ford, are made in three styles as follows: Angle, channel and tee, in black or nickel finish.

Manufactured by the Toledo Cable Company, Toledo, O. Descriptive circular and prices sent on request.

HACK SAW MACHINE.

The Olmsted improved power hack saw machine, shown herewith, is designed to occupy little space, avoid friction and provide a firm support for the saw frame and saw guide, thus insuring a true, vertical cut through the work, provide convenient facility for lowering and raising the saw to and from the work and for conveniently adjusting the pressure upon the saw.



Easy Built Racks.

It also provides a swivel vise for retaining the metal, with a pointer or indicator to move along a segment marked to indicate various angles. The hack saw is secured in a frame, to which is given a horizontal reciprocating motion by use of a revolving crank and connecting rod.

In the illustration, B is a stout post firmly fixed in the bed piece, and A a sleeve. G embraces this post and is adjustable upwards and downwards. To this sleeve is firmly secured a horizontal slideway, upon which the saw frame operates. The saw guide H is attached to the sleeve G close to the work and is adjustable in all directions. The lowering and raising lever E, starting lever F and the vise screw wheel are conveniently located at the front of the machine. The weight J is adjustable on the lever E, so as to afford any desired pressure on the saw.

With this construction no countershaft is required, there being a clutch for starting and stopping. This machine is made of steel and iron and the unfinished parts are painted. The metal is so distributed as to give strength and durability. When the saw cuts through the work a bell rings continuously until the machine is stopped. These machines are made in various sizes to drive saws of various lengths.

Manufactured by L. H. Olmsted's Son, Hasbrouck Heights, N. J. Prices range from $15 upwards. Correspondence solicited.

RUNNING GEAR ALIGNER.

It is often admitted that the tires are the largest expense in the maintenance of a car, therefore, any means which will assist in reducing this item should be of interest to the motoring public. Besides this, the pleasures of motoring are largely measured by their condition. One of the chief causes of excessive tire wear is the incorrect alignment of the front wheels. One of the best instruments made for determining this condition is the auto running gear aligner, shown in the accompanying illustration. It is a tool of precision by which can be ascertained instantly whether the front wheels are in true alignment.

Manufactured by the Mechanical Utilities Corporation, 5 No. La Salle street, Chicago, Ill. List price, $12.50. Write for descriptive circular.

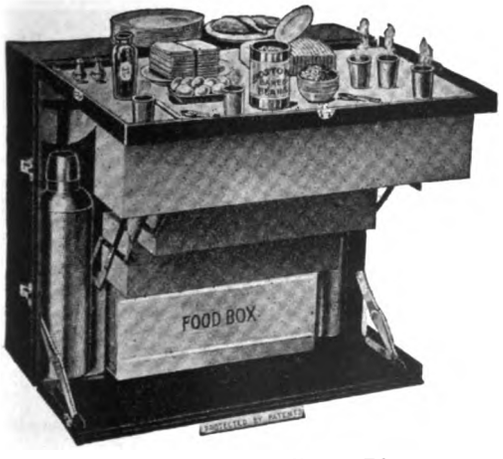
KNICKERBOCKER LUNCH KIT.

Knickerbocker lunch kits are especially designed for tourists. One outfit, which is shown in the accompanying illustration, is listed as the "Made-Right" No. 3 and has capacity for six persons.

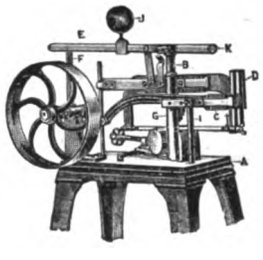
The upper front of the case is quickly detached and clasped to the top so as to form the dining table. A deep flange around the edge prevents articles from falling off. When erected in the car it is held by a simple means and can easily be removed.

There are two compartments for one quart thermos bottles or jars, three hinged trays with removable metal boxes for foods, beverages, etc., and a removable metal food box for other eatables. The standard equipment includes six white enameled plates and six cups and saucers; six each nickel silver knives, forks and spoons, also six cloth napkins and a salt and a pepper shaker.

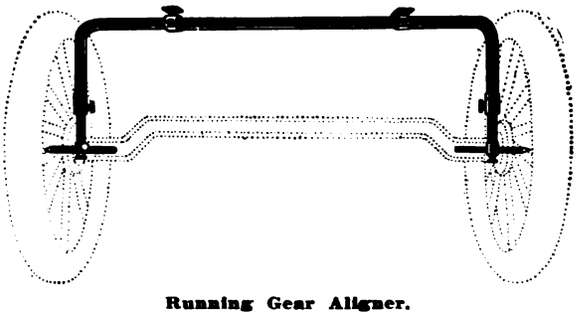
Manufactured by the Knickerbocker Case Company, Knickerbocker building, Chicago, Ill. List price, $25. Write for circular which describes and illustrates the different outfits made.



Knickerbocker Pullman Diner.



Hack Saw Machine.



Running Gear Aligner.

Bull Dog Spring Bumper.

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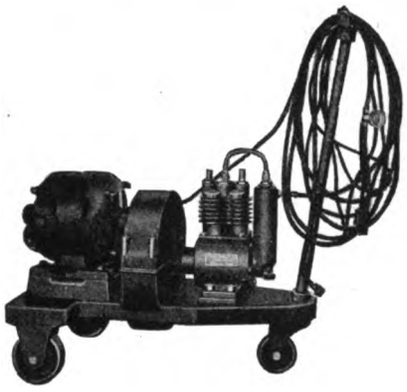
Tools and Equipment for Garages and Service Stations.

MASTER GARAGE PUMP.

The Master garage air pump, shown herewith, is model W, a two-cylinder motor driven type, designed for use in public garages where there is a demand for quick service. A notable feature of all Master pumps is that no piston rings are used, the pistons being extra long and made of special steel and lapped into the cylinder walls, an arrangement which the maker claims prevents oil being forced into inner tubes. As an added precaution a small expansion chamber is attached to each pump to clarify the air. A General Electric one-half horsepower motor is used for model W, which is supplied with either a truck or without. Sold on a 10 days' trial basis and guaranteed.



Master Garage Pump, Model W.

Manufactured by the Hartford Machine Screw Company, Hartford, Conn. List price with A. C. motor, $105; with D. C. motor, $100.

VULCAN SPRINGS.

The manufacturer of Vulcan springs is offering an attractive display rack to distributors with each order of its assortment of springs and makes other inducements that will interest every garage owner and proprietor. The company carries in stock all types and sizes of springs suitable for 90 per cent. of all styles of American made motor vehicles and sells these at very moderate prices in view of the exceptional quality of the product. Garage men and repair men should write for full particulars of the distributor proposition.

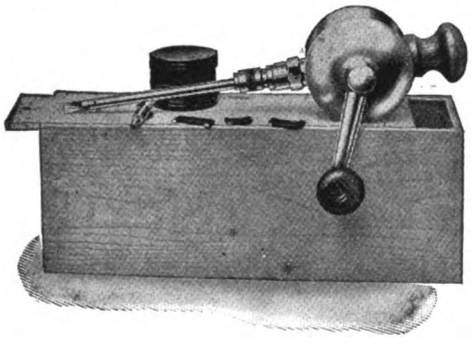
Marketed by the Jenkins Vulcan Spring Company, offices at 1402 Chestnut street, St. Louis, Mo.; 708 Commerce street, Fort Worth, Tex., and 29 Caldwell avenue, Sumter, S. C.

SIOUX VALVE GRINDER.

The Sioux valve grinder, illustrated herewith, is designed especially to meet the need for a simple, yet inexpensive tool for grinding valves. It is constructed of the best material and operates on ball bearings. By turning the handle continuously in the same direction the valve rotates back and forth on its seat. This motion is a trifle further in one direction than the other, thereby producing an accurate reciprocating motion, which is absolutely necessary for perfectly ground valves. The outfit, which includes all necessary driving points and large double can of valve grinding compound, is packed in a neat wooden box.

Vulcan Spring Display Rack.

Manufactured by Albertson & Co., Sioux City, Ia. List price, $7.



Sioux Valve Grinder and Case.

GENOLITE FOR FORDS.

Genolite consists of a complete lighting outfit for Ford cars and includes generator, automatic cut out, storage battery, control switch and lamps. The generator is conveniently attached, without machine work or the removal of the radiator, by means of a bracket, which engages the studs of the front water connection. The driving pulley is split, so that it may be easily applied to the fan spindle. Drive is by a spiral steel belt, which maintains proper tension and is amply efficient for transmission of the small power required to generate the eight or 10 watts, which is maximum output.

The battery consists of a single cell of 40 amperes-hours capacity and is connected to the dynamo through an automatic cut out, which functions at a variable speed of 10 miles an hour, the battery carrying the light load below that speed and when the motor is not running.

The lamps supplied are black enamel, nickel trimmed, and are furnished with the necessary bulbs, and with sufficient wire to connect up the system. The Genolite can be fitted with very little trouble and at practically no expense beyond the initial cost of the outfit.

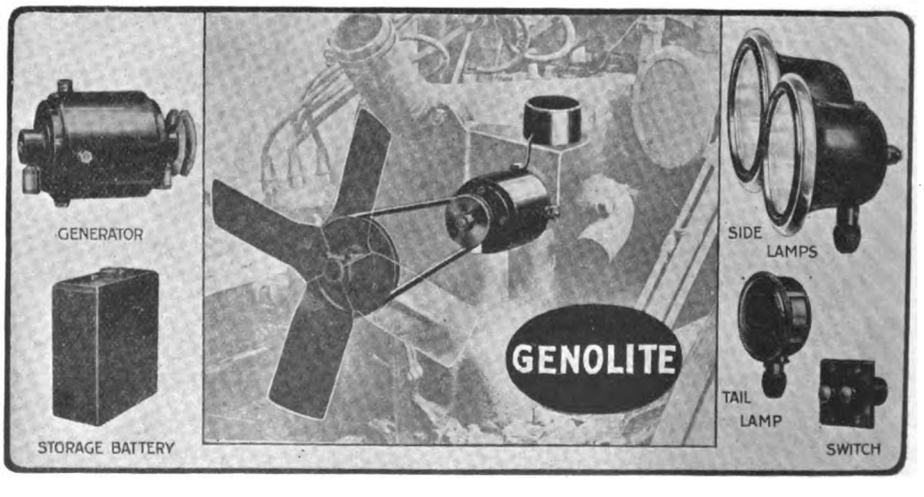
Manufactured by the Detroit Starter Company, Detroit, Mich. Price, $19.85 f. o. b. Detroit, including all attachments.

TWO STEVENS SPECIALTIES.

A very handy device recently introduced to garages and machine shops is the Stevens automatic blow cock, which, attached to any air storage system, furnishes an efficient means for cleaning cars, bodies, tops, motors and machinery and machine work. It performs its work almost instantaneously and thoroughly and consequently will be found to be very valuable equipment.

The Bryant valve spring remover is a universal ratchet tool that can be used in practically every make of motor, including the latest models with over head valves. It also can be used as a clamp to hold springs compressed securely during the operation of replacement. Both these devices are supported by the national reputation of the manufacturer.

Manufactured by Stevens & Co., 375 Broadway, New York City, and carried by practically all jobbers. List price of



The Units of the Genolite and How It Is Installed.

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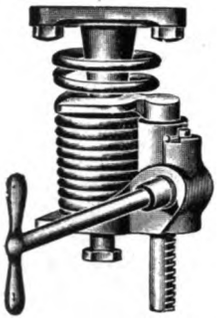
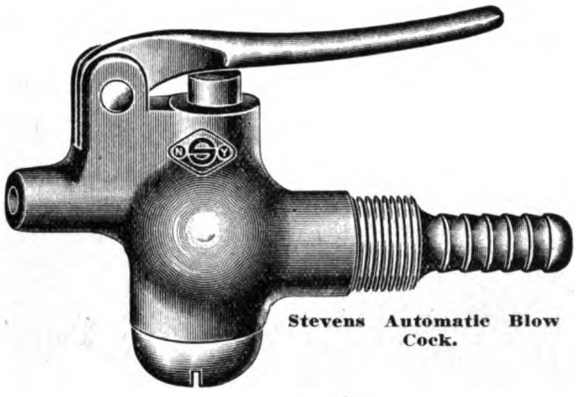


Bryant Valve Spring Remover.



Stevens Automatic Blow Cock.

the Stevens blow cock, 75 cents; of the Bryant valve spring remover, with key, $1.50. Write for discounts.

AUTOMOBILE LAMP ASSORTMENT.

The assortment of Edison Mazda automobile lamps, shown in the accompanying illustration, will provide the dealer with the minimum stock of lamps that should be carried to meet the requirements of the standard cars. This selection is such that the dealer can supply lamp renewals for 90 per cent. of all cars manufactured. The assortment includes the efficient Edison Mazda C lamp, which is the largest type of automobile headlight.

The lamps are arranged in a heavy cardboard container, making a very attractive and convenient counter display. To co-operate with the dealer the maker supplies publicity material, so that the inexperienced salesman can, by reference to the information given, always furnish the correct lamp.

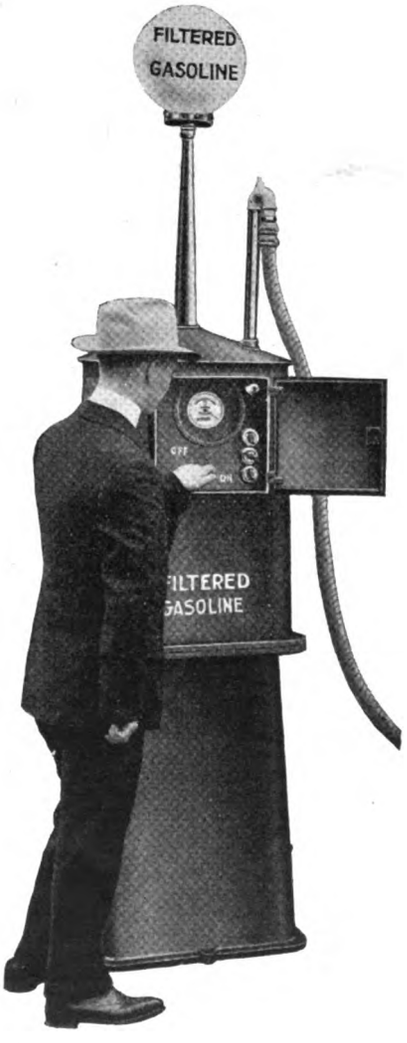
Each assortment is accompanied by a booklet which shows the proper lamp for all electric and gasoline cars of 1914-15-16 models. The remainder of the outfit includes price cards printed in the form of order blanks, a wall chart showing all Edison Mazda automobile lamps, data books, Edison Mazda service station signs and Edison Mazda automobile lamp pennants.

Manufactured by the Edison Lamp Works of General Electric Company, Harrison, N. J. Prices supplied upon request.

USED ELECTRIC TOOLS.

Rebuilding tools for practical service has become quite an important business, and the users of such equipment almost universally declare that they are practically as good as new. The St. Louis Portable Tool Company specializes in this kind of work, concentrating upon electric motors and electric drills, one of the last named being shown on this page. The company employs none but expert workmen and guarantees the tools to give satisfaction. In the case of electric drills and motors the company positively asserts that it can sell the rebuilt tools at 25 to 30 per cent. less than the cost of new one. When writing for descriptive literature and prices, be sure to state the capacity and kind of current available.

Rebuilt Portable Electric Drill.



Milwaukee Electric Filling Station, Showing Dial and Operating Switches.

Counter Display of Edison Mazda Lamps.

Marketed by the St. Louis Portable Tool Company, 1320 Cass avenue, St. Louis, Mo. Prices supplied by the manufacturer.

MASTER FILLING STATION.

The Master gasoline filling station is operated by electricity from any 110-volt circuit, and if need be can be operated by hand. The accompanying illustration shows its advertising possibilities and general method of operation. It is provided with a large dial by which the consumer can see exactly the amount of fuel he gets, while the same dial shows the dealer the total amount of gasoline passing through the station, registering as high as 100,000 gallons and then repeating. This dial cannot be manipulated by an unauthorized person. The flow is started and controlled by a switch, the maximum amount being 25 gallons a minute and the minimum a mere drizzle.

The motor is entirely enclosed and sealed so that it is invulnerable to moisture, gases or the elements. The switch operates in oil and sparking inside the station is said to be impossible. The pump is a rotary type, made almost entirely of brass. The station is connected with the main gasoline supply the same as any hand pump. Experience has demonstrated that its current consumption costs approximately four cents per thousand gallons pumped.

All operating mechanism and control buttons and switches are concealed and locked so that only the garage workman, or others with proper authority, can start or stop the pump. The filling nozzle fits inside the dial box.

For night service the station is provided with a small electric light to illuminate the dial, and a large ball sign light at the top of the stand, both of which are controlled by accessible switches. A third switch is for shutting off the current when oiling the pump's mechanism.

Each pump is supplied with every appurtenance, including 10 feet of metal hose, a portable filling nozzle, electric wire and necessary connections.

Marketed by the Milwaukee Tank Works, 151 Becker street, Milwaukee, Wis. Write for prices and descriptive literature.

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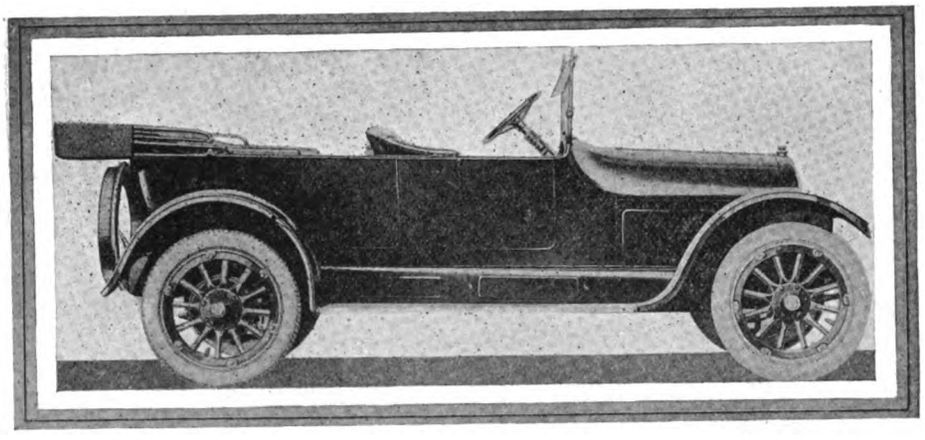
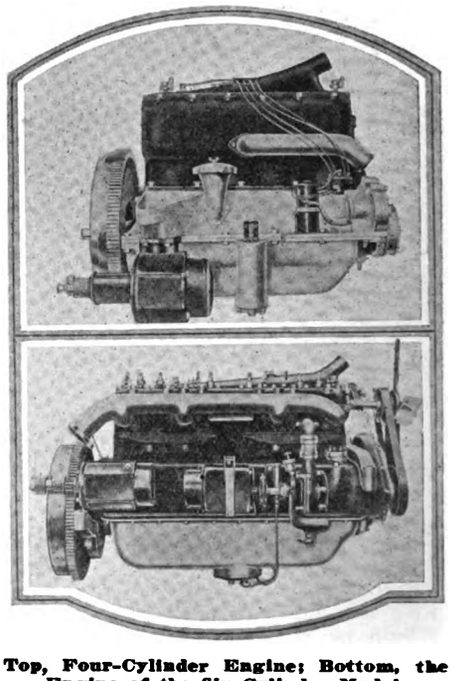
OVERLAND SERIES 85 FOUR CYLINDER MODEL.



Four-Cylinder, Five-Passenger Touring Car, Manufactured by the Willys-Overland Company, Toledo, O.; Price, $795—Complete Description in The Automobile Journal, July 25, 1916.

Motor, Four-Cylinder, L Head Block.
Bore and Stroke, 4⅛ by 4½.
Horsepower, 35.
Carburetor, Tillotson.
Lubrication, Pump-Splash.
Clutch, Leather-Faced Cone.
Cooling, Thermo-Syphon.
Ignition, Improved Battery.
Starting and Lighting, Auto-Lite.
Rear Axle, Full Floating.
Tire Sizes, 32 by 4.
Wheelbase, 112 Inches.



Top, Four-Cylinder Engine; Bottom, the Engine of the Six-Cylinder Model.

NEWLY INCORPORATED CONCERNS.

Monthly Record of New Business Houses that Have Been Chartered in Various States.

This department is an important summary of the concerns which have received charters in the various states to conduct businesses that have direct relation with the motor vehicle industry. In each instance the amount of capitalization is given, when such information is available, the names of the individual incorporators and the nature of the business to be conducted.

Newly Organized Manufacturers of Cars.

Kankakee, Ill.; Kankakee Automobile Company; $500,000; to manufacture automobiles and accessories; O. L. Chiniquy.

La Porte, Ind.; Great Western Manufacturing Company; to manufacture and sell automobiles, aeroplanes and accessories; E. J. Lonn, C. A. Lonn, A. E. Lonn, V. A. Lonn, J. M. Lonn, W. R. Lonn.

Augusta, Me.; Armored Tire Company; $100,000; to manufacture and sell motor cars, tires, pneumatic tires and reliners for same.

Augusta, Me.; Langford Company of America, $1,000,000; to manufacture, buy, sell auto vehicles and accessories; M. E. Hegarty, president.

Augusta, Me.; The Superior Tire and Rubber Company; $500,000; to manufacture and deal in tires and pneumatic devices for automobiles.

Portland, Me.; The Schoneck Company; $100,000; to manufacture, deal and operate motor cars, trucks, aeroplanes, boats and other vehicles; president, Albert F. Jones; treasurer, T. L. Croteau; clerk, James E. Manter.

Cambridge, Mass.; T. H. Rideout Manufacturing Company; $50,000; Patrick J. Delaney, Thomas H. Rideout, Olive R. Rideout.

Detroit, Mich.; Austin Auto Company; $100,000; to manufacture cars and to sell parts; Walter S. James, Emma H. Austin.

Detroit, Mich.; Wilson-Holland Manufacturing Company; $25,000; W. H. Wilson, S. A. Wilson, T. L. Holland.

New York, N. Y.; The American Outboard Motor Corporation; $125,000; to manufacture automobiles and machinery.

New York, N. Y.; Gotham Transportation Company; $50,000; to manufacture motor driven vehicles, parts, accessories; J. F. Wiggin.

Philadelphia, Penn.; Motor Car Accessories Company; to manufacture and sell automobiles and accessories; F. R. Hansell, George H. B. Martin, S. C. Seymour.

Philadelphia, Penn.; Philadelphia Motor Service Corporation; $75,000; to manufacture and sell automobiles and to conduct garages; H. Bonsall, R. M. Cook, J. M. Frere.

Garages and Repair Shops Newly Chartered.

Oak Park, Ill.; Universal Auto Garage; $4500; Philip O. Reifsnider, Charles J. Fleming, Newton W. Reifsnider.

Downers Grove, Ill.; Kidwell Garage Company; $10,000; J. F. Kidwell.

Mount Sterling, Ky.; Mount Sterling Garage; $4800; O. C. Chenault, Lee Orear, W. S. Smathers, Perry Flora.

Stanford, Ky.; Bailey Garage Company; $1800; H. L. Bailey, J. H. Warner, R. L. Collier.

Pontiac, Mich.; Opera House Motor Sales and Garage Company; $10,000.

Albany, N. Y.; H. A. McRae & Co.; $25,000; to conduct a garage and to deal in motors and tires; P. C. Ford, E. F. Marquette, H. A. McRae.

Hamburg, N. Y.; Hamburg Garage Corporation; $15,000; John C. Lang, Charles B. Fuller, James Stearns.

Hancock, N. Y.; Klein Wagon Works and Garage, Inc.; $10,000; John Klein, Charles N. Klein, Percy N. Klein.

New York, N. Y.; Western Garage Company, Inc.; $1000; Wm. H. McIlroy, R. Von Bargen, Eliz Lappin.

New York, N. Y.; West 144th Street Garage, Inc.; $1000; Moses Rayved, Benjamin Rayved, Sidney Rayved.

Cleveland, O.; The Euclid Square Garage Company has increased its capital stock from $25,000 to $50,000.

Columbus, O.; The Dillonvale Garage Company; $1000; Ray C. Hess.

Lebanon, O.; The Railway Auto Company; $1000; to operate a garage and repair shop; J. A. Kilpatrick, D. M. Worley, Charles Kohr, J. Warren Wood, Robert E. Kline.

Houston, Tex.; Main Street Garage; $2500; George F. Howard, J. J. Bonner, R. M. Stephens.

Accessories, Equipment and Supplies.

Dover, Del.; Imp. Carbon Chaser Corporation; $1,000,000; to manufacture chemical for the removal of carbon on engines; S. A. Anderson, S. B. Howard, L. H. Guhther.

Davenport, Iowa; Dorman McClelland Tire and Supply Company; $10,000; F. E. Dorman, president.

Kalamazoo, Mich.; Automobile Liquidation Company; $16,000.

Boston, Mass.; Shaw Tire Company; $300,000; A. B. Shaw.

New Brunswick, N. J.; The Indian Tire and Rubber Company; $100,000; to manufacture and deal in motor truck tires; Willard P. Farley, president; Emer W. Van Ness, secretary and treasurer; Albert Hauschild, production manager.

Newark, N. J.; Heat-Ometer Company; $5000; to deal in auto accessories; Harris L. Arouson.

Brooklyn, N. Y.; H. A. Edward Sales and Service Company, Inc.; $1000; Harry A. Edwards, Susie Edwards, George A. Edwards.

Brooklyn, N. Y.; Troy Auto Service Company, Inc.; $3000; Elmer E. Salonius, Ellen J. Salonius, Edward Foreenbach.

New York, N. Y.; Kohn Service Contracting Company, Inc.; $15,000; to deal in motors, cars, carriages, machinery and supplies; J. and S. Kohn, M. Corin.

New York, N. Y.; Thomas & Guzman Company; $10,000; to deal in tires; W. W. Thomas.

Toledo, O.; The Oiler-Cleveland Company; $10,000; Howard Lewis, Elizabeth H. Watson, S. A. Parker, Frank S. Lewis, Frank M. Hackett.

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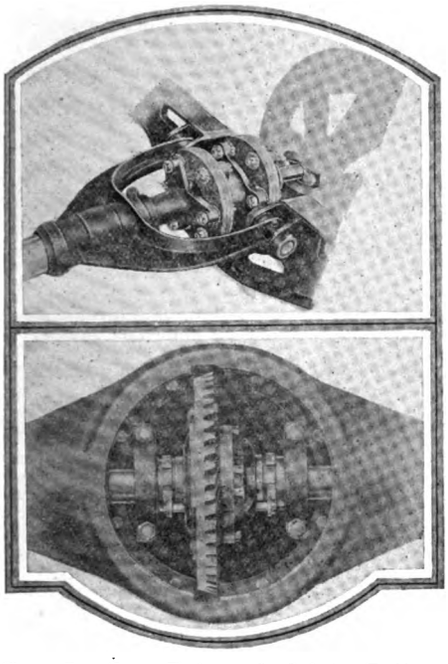
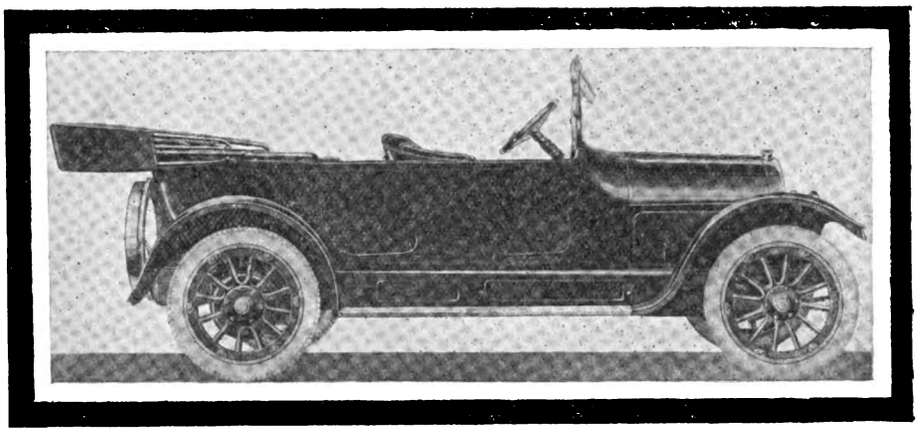
OVERLAND SERIES 85 SIX CYLINDER MODEL.



Top, Leather Universal Joint; Bottom, Bevel Gear Assembly Employed.



Six-Cylinder Touring Car, Five-Passenger, Manufactured by the Willys-Overland Company, Toledo, O.; Price, $925—Complete Description in The Automobile Journal, July 25, 1916.

Motor, Six-Cylinder, L Head Block.
Bore and Stroke, 3¼ by 4½.
Horsepower, 40.
Carburetor, Tillotson.
Lubrication, Pump-Splash.
Clutch, Leather-Faced Cone.
Cooling, Circulating Pump.
Ignition, Improved Battery.
Starting and Lighting, Auto-Lite.
Rear Axle, Full Floating.
Tire Sizes, 32 by 4.
Wheelbase, 116 Inches.

Oklahoma City, Okla.; Muller Tire and Rubber Company; $15,000; George T. Brown.

Oklahoma City, Okla.; Oklahoma Chalmers Sales Company; $30,000; J. K. Wadley, A. E. Reid, H. E. Kelly.

Memphis, Tenn.; Lee Tire Company; $5000; G. M. Seewald, R. F. Rouse, R. T. Seewald, J. M. McKernam, Earl King.

Walla Walla, Wash.; Double Thread Tire Exchange; $2000; Rosa Goldstein.

Neenah, Wis.; The Neenah Auto and Equipment Company; $10,000; G. E. Sands.

Dealers In Automobiles and Motor Trucks.

Bristol, Conn.; Bristol Motor Sales Company; $25,000; to handle the Ford, Buick and Maxwell.

New London, Conn.; Standard Garage; $5000; to make and deal in automobiles; Charles H. Humphrey, Joseph M. Foster, Gerrald S. Howland.

Waterbury, Conn.; H. I. Smith Motor Car Company; $10,000; president and treasurer, H. I. Smith; secretary, Bessie M. Smith.

Wilmington, Del.; John R. Wiggans Company, Inc.; $50,000; William F. O'Keefe, George S. Stiegler, E. E. Wright.

Chicago, Ill.; Abbott-Detroit Motor Car Company; $50,000; to deal in motor cars.

Lafayette, Ind.; American Motor Vehicle Company; $25,000; Jacob Weisenthal, William H. Crockett, Louis Marx.

Indianapolis, Ind.; Elcar Motor Sales Company; $10,000; to buy and sell motor vehicles and accessories; James F. Hill, Paul C. Hill, Jesse G. Marshall.

Davenport, Ia.; The Wolfer Cadillac Company; $50,000; H. J. Wolfer, E. J. Boud, C. R. Wolfer.

Covington, Ky.; B. B. Hume Automobile Company; $15,000; A. B. Rouse, J. L. Lassing, B. B. Hume, John Keller, F. C. Respass, F. J. Hanlon, J. F. Pieper.

Boston, Mass.; I. Endlar Company; $20,000; Isaac Enuler, Abraham Endlar, Pauline Endlar.

Butte, Mont.; The Montana Cadillac Company; $25,000; to handle automobiles, motor vehicles and supplies; M. E. Barry, J. H. McIntosh, Arthur Perham.

Great Falls, Mont.; Overland Great Falls Company; $50,000; to deal in automobiles.

Trenton, N. J.; Cut Price Auto Tire Company; $100,000; to deal in automobiles, bicycles and accessories; Isaac Fineburg, Herman Fineburg, John L. Hener.

Albany, N. Y.; Gahran-Pinchbeck Company, Inc.; $25,000; to deal in autos and to conduct a garage; A. M. Gahran, F. W. Pinchbeck, F. D. Gahran.

Albany, N. Y.; Laskey Motor Car Corporation; $10,000; to deal in motor cars, parts and to conduct garages; H. M. Laskey, M. Laskey, H. Laskey.

Albany, N. Y.; F. A. Stupplebeen Motors Corporation; $15,000; to deal in motor cars, motor trucks and accessories; C. D. Barry, A. D. Grant, F. A. Stupplebeen.

Brooklyn, N. Y.; Boston Auto Company, Inc.; $3000; Louis Thomas, Sophia Thomas, Harry Thomas.

Buffalo, N. Y.; Eastern Truckford Company; $20,000; to deal in motor cars and accessories; E. D. Sullivan, J. H. Sullivan, D. F. Sullivan.

Buffalo, N. Y.; H. E. Swezey Company, Inc.; $30,000; agents for automobiles and motors; H. E. Swezey, R. A. Chilson, H. W. Pottle.

Greenport, N. Y.; The Hedges Automobile Company, Inc.; $500; Samuel P. Hedges, S. F. Hedges, I. C. Wells.

Pelham Manor, N. Y.; Beacon Tire Company; $100,000; to conduct business of dealing in motorcycles and automobiles; B. A. Griffith.

Mt. Vernon, N. Y.; Williamson Auto Company; $2500; Thomas B. Williamson, Charles H. Dumpud, Orley T. Ham.

New York, N. Y.; Auto De Luxe, Inc.; $5000; to rent and sell automobiles of every kind; E. Haelers, Q. Garrizio, J. C. Warren.

New York, N. Y.; Motor Economy Corporation; $10,000; to deal in autos and gas engines.

New York, N. Y.; North Side Garage, Inc.; $8000; to deal in autos, auto trucks, repair shops and garages; K. Kosperowitz, P. Slesarenke, M. Radchenko.

New York, N. Y.; Pinehurst Garage, Inc.; $75,000; to deal in automobiles and motor vehicles; J. Fischer, M. Featherson, M. A. Cramer.

New York, N. Y.; Reliable Auto Delivery Company, Inc.; $25,000; to deal in autos, expressing, trucking and delivering; I. Katzenstein, H. Frankel, C. Cohen.

New York, N. Y.; Signal-Commerce Motor Truck Corporation; $500; Charles E. Lewis, H. E. Berdan, H. S. Gould.

Syracuse, N. Y.; Overland Utica Company, Inc.; $5000; John W. Lee, Marion B. Lee, T. F. Fitzpatrick.

Cleveland, O.; The L. & M. Auto Company; $10,000; M. Lamden, Louis Jacobson, A. Gordon, Joseph N. Ackerman, Joseph M. Bernstein.

Cleveland, O.; Master Motor Car Company; $10,000; to deal in motor cars; Charles W. Rush, William G. Radcliffe, L. E. Yaggi, Helen M. O'Boyle, R. E. Kouba.

Toledo, O.; The H. L. Yaryan Company; $10,000; will act as distributor for Westcott cars in northwestern Ohio; H. L. Yaryan, H. C. Adams, Blanche O'Brien, Nina F. Leavitt.

Purcell, Okla.; The Baird Motor Company; $5000; Pearl Baird, R. C. Baird, F. O. Tribbey.

Memphis, Tenn.; Automobile Exchange of Davidson county; $1000; B. F. Bell, Abb Landis, B. R. Demonbreun, J. R. Wilkerson, C. L. Alfrod.

Keyser, W. Va.; The J. A. Glaze Motor 'Bus Company; $5000; to deal in autos and trucks; J. A. Glaze.

Milwaukee, Wis.; William M. Bell Company; $100,000; William M. Bell, W. A. Huttensen, H. G. Bell.

Parts and Fittings Makers Incorporated.

Indianapolis, Ind.; Dugger Motor Sales Company; $15,000; J. P. Dugger, Sam O. Dugger, Frank L. Allen.

Cedar Rapids, Ia.; The Brown-Loftus Motor Company; $50,000; James A. Brown, H. E. Pratt.

Louisville, Ky.; The Martin Motor Company; $5000; W. C. Martin, Ophelia Martin, A. G. Martin.

Somerville, Mass.; Standard Auto Horn Company; $10,000; E. Charles Drouet, president and treasurer; Horace C. Hoskyns, Frederick W. Storch.

Detroit, Mich.; Freer Carburetor Company; $30,000; to manufacture carburetors and other automobile accessories; Frank R. Rose, P. M. Freer, P. B. Moody.

Detroit, Mich.; Riverside Machinery Depot; $75,000; to manufacture and deal in machinery and tools; Hyman L. and Louis Goldman, Isaac Payne.

Albany, N. Y.; Cross Port Motor Company; $100,000; to deal in internal combustion motors, engines, motor cars and patents; E. J. O'Connell, J. J. O'Connell, Jr., J. S. Casey.

Brooklyn, N. Y.; The Balt Motor Axle Company; $100,000; Charles F. Balt, John G. Snyder, John McCormick, Jr.

Buffalo, N. Y.; The Columbus Buggy Parts Company, Inc.; $5000; F. P. Cashmore, Helen Cashmore, C. E. Schoenborn.

Buffalo, N. Y.; One-Hand Auto Top; $600,000; F. Dobmeire, E. L. Kunz, W. L. Groe.

Mount Vernon, N. Y.; The Westchester Motors Corporation; $5000; R. A. Gauzen-

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muller, C. and L. R. Best.

New York, N. Y.; Keystone Vehicle Parts Company, Inc.; $5000; to deal in wheels for autos and bicycles; F. H. Summeid, S. W. Mower, R. K. Mickey.

New York, N. Y.; The Monitor Motor Company; $1,000,000; to manufacture motors; M. E. Caplan.

New York, N. Y.; Rex Motor Company, Inc.; $200,000; J. S. Starke, William A. Young, William H. Wilson.

New York, N. Y.; Russian Alliance Motor Corporation; $1,000,000; Abraham Goldberg, Louis J. Rosett, Jennis Deutsch.

New York, N. Y.; The Security Automobile Lock Company, 452 Fifth avenue; $100,000.

Cleveland, O.; The Esco Motor Lock Company; $10,000; R. H. Lee, F. H. Crew, W. J. Patterson, G. M. Gallagher, E. M. Holmgren.

Cleveland, O.; The Motorcraft Company; $1000; Charles W. Rush, William G. Radcliffe, L. E. Yaggi, Helm M. O'Boyle, P. E. Koubs.

Columbus, O.; National Fender and Auto Parts Company; $50,000; J. J. Shevlin and others.

Salem, O.; The Salem Motor Company; $40,000; Frank W. Glass, Nellie C. Glass, Alva G. Keller, Ferman N. Gaunt, Kirby Walker.

Youngstown, O.; The Mahoning Motor Company; $20,000; R. H. Rogers, Myron De Vinne, A. O. Fleming, P. H. Stanbaugh, Lewis S. Baldwin.

Pauls Valley, Okla.; Valley Motor Company; $3000; H. C. Moore.

Richmond, Va.; Coburn Motor Corporation; $10,000; T. Gray Coburn, J. T. Darden.

Richmond, Va.; Falls Motors Corporation; $2,000,000; Gustave Huette, president; Angelo R. Clas, secretary.

Bluefield, W. Va.; Johnson Automatic Tank Company; $5000; to deal in gasoline tanks; E. D. Wood.

Unclassified Incorporations Recently Made.

Washington, D. C.; Washington Motor Speedway Association; $100,000; Edward Voight, Jr., Bert M. Brockway, Julius Wenig.

Kankakee, Ill.; Overland-Mann Company, 139-147 N. Dearborn street; $50,000; Howard L. Mann, Fred Mann, Arthur S. Mann, Huntington James, Raimund Radeke.

Peoria, Ill.; Cummings-Rutherford Motor Car Company has changed its name to the Overland Company of Peoria and has also increased its capital stock from $1000 to $18,000.

Boston, Mass.; The Auto Service Company; $1,000,000.

Boston, Mass; Joyce Motor Car Service Company; $50,000; George L. Cohen.

Detroit, Mich.; Tannenholz Realty Company; $25,000; Benjamin and Mitta Tannenholz, Hugh Loewenthal.

Pentwater, Mich.; Pentwater Machinery Company; $2500; M. D. Gerard, F. M. Nichols, M. O. Chechy.

Portland, Mich.; The Builders' Lumber and Supply Company; $12,000; Levi and J. M. Marshall, A. V. Wright, J. B. Mathews.

South Haven, Mich.; The Pierce Lumber Company; $50,000; R. T. Pierce, H. W. Barner, Volney Ross.

Bronx, N. Y.; Blood Auto Renting Company, Inc.; $1000; Arthur L. Thompson, Fannie H. Blood, Anna M. Ruedi.

New York, N. Y.; The Apartment Stationary Distributing Company; $10,000; John E. O'Neil.

New York, N. Y.; F. H. Bunge and Bell Company, Inc.; $2000; James Bell, Thomas Morris, Edith M. Morris.

New York, N. Y.; Delion Exports Company; $25,000; G. W. Phillips.

New York, N. Y.; Thirty-eighth Street Taxicab Company, Inc.; $5000; to deal in autos and taxicabs for hire; J. Wenzel, H. Sauerteig, G. Duell.

New York, N. Y.; The Salvage Association of America; $10,000; Edwin R. Wolf.

Cleveland, O.; Used Motor Car Company; $20,000; Frank J. Merrick.

Racine, Wis.; O-U-Lite Company; $12,000; F. C. Christensen, T. W. Fuller, L. W. Peterson.

Wausau, Wis.; The Schubring Motor Car Company; $25,000; succeeds to the business conducted under the same style by Fred Schubring at First and Scott streets; Fred. Schubring, president; L. H. Hall, vice president and treasurer; E. D. Widmer, secretary.

NEW CONCERNS AND CHANGES.

General News Regarding Transfer of Ownership and Opening of Garages and Agencies and Changes of Names.

The following data relate to the establishment of new concerns, including agencies, garages, branches, service stations, repair shops, etc., and from valuable information. Herewith is also recorded the recent changes of names of business concerns in the industry and allied lines, and the transfers of ownerships of businesses. The record includes all the states and is classified for convenience.

Agencies, Dealers and Service Stations.

Kingman, Ariz.; Ayers & Greene have opened a new vulcanizing plant on West Front street.

Los Angeles, Cal.; Toney, Jeanette & Co. has opened at 775 North Broadway.

Tampa, Fla.; The Enterprise Garage has taken the agency for Acme tires.

Chicago, Ill.; The Ahlberg Bearing Company has opened a branch at 325 Davis street.

Ottumwa, Ia.; The Clemens Automobile Company will open a branch here. The other branch is in Sioux City.

Baltimore, Md.; The Laporte-Heinekamp Motor Company, Cathedral and Chase streets, the new distributor for Mitchell cars, is now open for business.

Galesburg, Mich.; Jones, Aldrich & Moreau Company have opened a sales room, service station and garage on the corner of Main and Battle Creek streets, in the old Bennett house, which has been completely remodelled.

Albany, Mo.; The Albany Equipment Company has opened for business.

Blairstown, Mo.; Teater & Delap have completed a garage and repair shop and have also added a welding department.

St. Louis, Mo.; The Mississippi Valley Motor Company has opened headquarters at 3436 Lindell avenue, awaiting the completion of its building at 3141 Locust street.

St. Louis, Mo.; Simmons Auto and Repair Company has opened a used car department at 1802 North Grand avenue. Henry Oxtendorf is manager.

Haverlock, Neb.; The C Street Garage has been opened by H. G. Vannoy.

Trenton, N. J.; The Swain-Hickman Company, 4040 Locust street, distributor of Republic trucks for Philadelphia, has opened a new sales room and service station at 9 Farr street.

Arnegard, N. D.; Striegle & Osing have organized the Arnegard Motor Company.

Columbus, O.; Harry O. Kuhn and Thane C. Hecox have opened an electrical repair and supply store at 265 Fourth street. They have the agency for Westinghouse electrical equipment.

Fairview, Okla.; James Hall & Son, Overland dealer, has added accessories to the stock.

Albany, Ore.; The Ralston Electric Supply Company has secured the agency for Gould storage batteries and Michelin tires.

Dallas, Tex.; The Couch Auto Association has leased a building at 2208 Commerce street, handling Case cars and other lines.

San Antonio, Tex.; The Clem Motor Car Company, located at the corner of Crockett and Navarro streets, is adding 10,000 feet more of floor space.

San Antonio, Tex.; The Ford Motor Car Company has opened a branch on Commerce street and is remodelling the interior of the building.

Tacoma, Wash.; Charles E. Ellison is now proprietor of the Tacoma Tire Store, handling Knight tires and accessories.

Tacoma, Wash.; John Geissler is now distributing Miller tires. He is the proprietor of the Square Shop.

Beloit, Wis.; Wallace Poe, 905 Copeland avenue, has opened a used car and parts store and shop and will specialize in dismantling old cars and selling parts.

Washburn, Wis.; Demars Brothers, owners of the Service Garage, have made a large installation of steam vulcanizing and other tire repair equipment.

Garages and Repair Shops Newly Chartered.

Los Angeles, Cal.; The Fifth Street Garage of 221 East Fifth street, has opened a second annex on Maple avenue. Annex one is on Winton street.

St. Anthony, Ida.; Riverside Garage is now completed. The garage is fireproof and will hold 50 to 60 cars. A full equipment of machinery will be installed and an oxy-acetylene welding and brazing plant. The garage will also be the Studebaker service station.

Chicago, Ill.; Samuels Brothers has opened a new garage and sales room, 50 by 250 feet, at 4067 Broadway.

Essex, Ia.; Dorf Bakke has opened a garage.

Lewis, Ia.; The Kunze Auto Company Garage is now completed and has opened for business.

Dexter, Kan.; Dan Beaton has leased the Callison livery stable and will convert it into a garage.

Home City, Kan.; J. C. Duncan and Oakley Sitton have opened a repair shop.

Inman, Kan.; Charles Rutledge has leased the repair department of the George P. Kliewer Garage.

Princeton, Me.; Ralph Lyons has opened a new garage on Main street.

North Adams, Mass.; Anson Williams has opened a garage on Summer street.

Bad Axe, Mich.; The Rapson Garage has opened for business.

Detroit, Mich.; George W. Peoples, Jr., has leased the garage building and will open a garage and repair shop.

Detroit, Mich; Reliable Tire and Repair Shop has opened at 1604 Woodward avenue, carrying a line of automobiles and accessories and doing vulcanizing and repairing.

South Lyons, Mich.; Fred Burt has opened a garage.

Annandale, Minn.; C. F. Miller has opened a garage.

Louisiana, Mo.; Carle Hagar has opened a garage.

Milan, Mo.; W. E. Knabe has opened a repair department in his new garage.

Sedalia, Mo; R. V. Savage, formerly mechanic at the Sunny Side Garage, is now operating a garage of his own at 310 South Lafayette.

Auburn, Neb.; L. A. Newman has opened a new garage.

Albany, Ore.; W. W. Crawford, Ford agent, has erected a garage opposite the Oregon electric depot.

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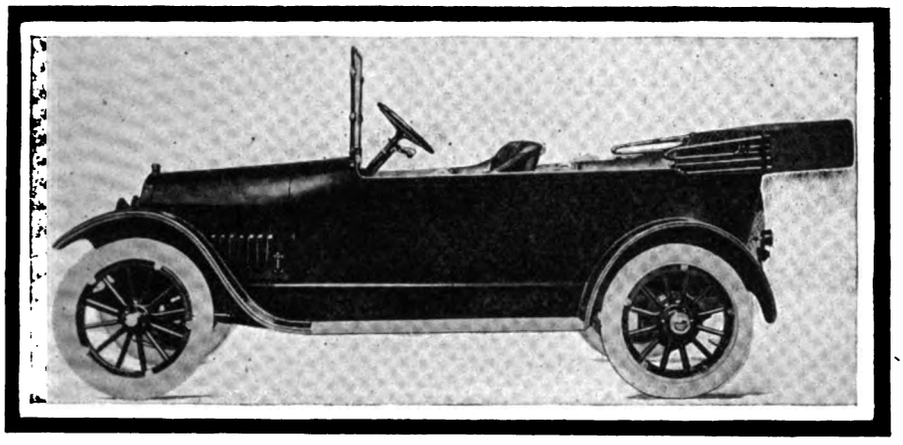

DESCRIPTION IN TABLOID FORM OF THE NEW LAUREL FOUR CAR, MODEL 35.

The Laurel Model 35 Touring Car, Manufactured by the Laurel Motor Car Company, Richmond, Ind.; Price, $795—Complete Description in The Automobile Journal, July 25, 1916.

Motor, Four-Cylinder Block Casting.
Bore and Stroke, 3¾ by 4¼ Inches.
Horsepower, 36 at 2800 R. P. M.
Lubrication, Force Feed and Splash.
Clutch, Plate Asbestos Faced.
Cooling, Thermo Syphon.
Ignition, Dixie Magneto.
Starting and Lighting, Disco.
Gearset, Three-Speed Selective.
Rear Axle, Full Floating.
Tire Sizes, 30 by 3½.
Wheelbase, 112 Inches.

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Tacoma, Wash.; Hoyt & Lash have opened a general repair shop at 1115 Tacoma avenue. A specialty will be made of repairing Studebakers.

Fort Atkinson, Wis.; Roy and Adolph Klement have taken possession of their new garage on South Third street, West. The building is 50 by 100 feet and two stories and basement. The repair shop on the second floor is connected with the other floors by a large electric elevator. Storage for 75 cars is provided.

Poynette, Wis.; Palmer & Beacham have taken occupancy of their new fireproof garage and service station, erected at a cost of $8000.

White Sulphur Springs, W. Va.; The Cabell Fireproof Garage on the James river and Kanawka turnpike has been completed.

Recent Transfers of Business Ownerships.

Birmingham, Ala.; C. P. Parsons & Sons' garage on Fifth avenue and 19th street has been sold to Hamilton Simms and W. H. Dennis. The garage will be known in the future as Simms-Dennis Motor Company.

Oatman, Ariz.; Charles Iehl has taken over the management of the Old Trails Garage.

Millsboro, Ill.; A. O. Kettelkanip's garage on West State street has been purchased by R. W. Snedeker, who will improve the business.

Rantoul, Ill.; C. F. Walters has purchased the McCullough & Sons Garage. Mr. Walters will have the repairing and supplies. McCullough & Son will retain the agencies.

Cedar Rapids, Ia.; The Foy Supply Company has dissolved, but the business will be conducted until Oct. 1, when the newly organized Overland Doty Company will take it.

Des Moines, Ia.; J. V. Henley has sold his holdings in the Hippee-Henley Motor Supply Company to George P. Hippee. The company will resume the old name of the Hippee Motor Company.

Fayette, Ia.; A. L. Vesperman has purchased a garage. He will handle Ford and Oakland cars and also operate a livery.

Hartley, Ia.; J. S. Messer has bought out his partner, Edward Johnson, and the firm has been dissolved.

Hamburg, Ia.; Joseph Mitchell has bought the interest of his partner, Halbert Martin, in the Standard Garage.

Lenox, Ia.; G. H. Martin has sold his repair business to L. E. Neely of Sharpsburg, Ia.

Marshalltown, Ia.; The Overland McMahon Company of 101 South Third avenue has been purchased by George and Joseph Rowe.

Ringsted, Ia.; The Nelson Motor Company Garage has been bought by N. H. Hendricksen.

Waterloo, Ia.; The Morris Motor Car Company has purchased the Rickert property at East Fifth and Mulberry streets.

Clay Centre, Kan.; I. R. Watts has sold his automobile business to Homer Harner of Green, Kan. Mr. Watts will build a garage for storage and repairs.

Clyde, Kan.; Linn & Danielson have bought the Ford Garage from Phil Lapaille and are now in charge.

Larned, Kan.; F. H. Idnerweisen has bought the Frizell Garage.

Ann Arbor, Mich.; Charles Doust has purchased the repair shop of E. D. Chipman.

Coldwater, Mich.; The New Southern Michigan Garage has opened for business by E. A. Biddleman.

Howell, Mich.; Britten & Fohey have leased a new building, 50 by 160 feet, which is being erected on Grand River street.

Jackson, Mich.; The Reliable Auto Sales Company at East Main street will be the local agency for Chandler cars, being changed from L. C. Watkins.

Midland, Mich.; The Main Garage has been sold by W. F. Valliere to George Venner.

Zeeland, Mich.; H. H. Karsten and Brothers have purchased the building of the De Jonge estate on Main street for a garage.

Albert Lee, Minn.; Black's Garage on Newton street will do business under the direction of George Howser, formerly of the Motor Inn Company, who will handle Saxon cars.

Bigelow, Mo.; Allen Notley has taken charge of the Bigelow Garage, adding a repair department and securing the agency for the Ford.

Cassville, Mo.; L. E. Fawver has secured the agency for the Ford, formerly held by Chandler & Black.

Richmond, Mo.; Roy Shelley has sold his garage to Charles Peterson and Edgar Kincaid.

Schell City, Mo.; Young & Berry have bought the garage formerly owned by A. J. Boatwright.

Bridgeport, Neb.; Graham & Co. have bought the garage business of Clawges & Nelson.

Cozad, Neb.; William Robertson has sold his garage to Frank Corpenning and A. Duval.

Falls City, Neb.; The Stump Garage has been bought by H. J. Prichard.

Franklin, Neb.; Chester Joy has bought the garage business of Guy Joy.

Minatare, Neb.; Charles Hindes has sold his interest in the Ford Garage to Harry Leafgreen.

Oxford, Neb.; C. S. Prime has purchased the interest of his partner, A. J. Archer, in the Ford Garage.

Enid, Okla.; The Auto Service Company of 210 North Independence is under new control. P. E. Hixson is manager.

Enid, Okla.; The Enid Tire and Supply Company at 111 East Broadway was purchased by J. W. Finley and J. T. Carpenter, who has taken possession.

Guymon, Okla.; The Prairie Tire and Rubber Company has been purchased by George B. Rockwell.

Portland, Ore.; A. E. Neate, formerly of Neate & McCarty, has purchased a half interest in Bolton's service station.

Martin, S. D.; Edward Stanton has leased the C. S. Allen Garage.

Tulare, S. D.; A. C. Fogelsong has bought the W. H. Plakett Garage.

Columbia, Tenn.; The Gamble Garage on South Main and Eighth streets has been purchased by Rush Gresham.

Waco, Tex.; The Herrick & McLarty Auto Company, distributor of the Chevrolet car, and the Glide Motor Company, have consolidated to form a corporation, which will handle Chevrolet and Oakland automobiles.

Tacoma, Wash.; The A Street Garage and Repair Shop is now being operated by McArdle & Powers.

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AGENCIES RECENTLY APPOINTED.

Add to and Correct Your Mailing List—Symbol * Indicates Commercial Vehicle, † Electric, and ‡ Light Car.

CALIFORNIA.

Fresno—Chandler, Cobb, Evans Co.
Long Beach—King, J. S. Bolton.
Los Angeles—Abbott-Detroit, Roy E. Burbank.
†Owen-Magnetic, Los Angeles Electric Auto Co.
*Stewart, Stewart Truck Sales Co.
San Diego—King, Coniry & Shank.

COLORADO.

Denver—Allen, J. S. Morrison Auto Co.
Chalmers, E. J. Johnson.
Cole, Cole Motor Sales Co.
Dort, Chamberlain-Woods Motor Sales Co.
Halliday, Mulnix & Rarie Auto Sales Co.
King, Overland Auto Co.
Mitchell, H. Grant Wimbush.
Overland, Willys-Overland Inc.
Patterson, Mid-West Auto Sales Co.
Roamer, Mulnix & Rarie Auto Sales Co.
Ross, Mid-West Auto Sales Co.
Saxon, Overland Auto Co.
*Moore, C. B. Auto Service Co.
*Wichita, Mid-West Auto Sales Co.
Fort Morgan—Chalmers, J. M. Scoville.
Steamboat Springs—Velie, Steamboat Mercantile Co.

CONNECTICUT.

Hartford—Chalmers, A. C. Hine Co., 314 Pearl St.
*Mack, John A. Morris, 347 Trumbull St.
*Saurer, John A. Morris, 347 Trumbull St.

DELAWARE.

Wilmington—Oakland, A. F. and W. L. Fader.

DISTRICT OF COLUMBIA.

Washington—King, Edelen Brothers Motor Co., 1612 14th St.

ILLINOIS.

Bloomington—Marmon, Corn Belt Auto Co.
Scripps-Booth, Corn Belt Auto Co.
Champion—Studebaker, Holmes Auto Co., 410 No. Neil St.
Kasbeer—Abbott-Detroit, Riley & Ross.
Ladd—Elgin, Knauf Garage.
Marseilles—Oldsmobile, C. A. Latimer.
Rockford—Abbott-Detroit, Central Auto Co.
Studebaker, Collier Auto Co.
Springfield—Abbott-Detroit, Chas. Bradley & Co.
Urbana—Abbott-Detroit, H. R. Morgan.

INDIANA.

Anderson—Oldsmobile, Beck & Co.
Lafayette—King, Walter P. Clark.

IOWA.

Armstrong—Buick, Johnson & Fink.
Ford, Johnson & Fink.
Carson—Oldsmobile, Snider Oldsmobile Co.
Cedar Rapids—Oldsmobile, Russell Cadillac Co., 128 N. Third St.
Davenport—Velie, Iowa Auto and Tire Co.
Dubuque—Overland, Dubuque-Overland Co.
Sioux City—Hupmobile, Douglass & Senechal Garage.
Maxwell, Iowa Auto Sales Co.

KANSAS.

McCune—Overland, William Lampton.
Centerville—Overland, J. H. Gear, Sr.
Kingman—Overland, Greenleaf & Hanlon.
Willys-Knight, Greenleaf & Hanlon.
Osborne—Oldsmobile, Earl Roice.
Salina—Overland, Ollinger Auto Co.

LOUISIANA.

New Orleans—Maxwell, Maxwell Motor Co., 537 Baronne St.

MAINE.

Portland—Marmon, Maine Motor Co., Free and South Sts.

MARYLAND.

Baltimore—Dodge Bros., Eastwick Motor Co.
Mitchell, La Porte Heinekamp Motor Co.

MASSACHUSETTS.

Greenfield—Buick, Jas. M. Downs.
Hancock—Oldsmobile, M. C. Getchell, 19 Front St.
Lawrence—King, Blue Line Jitney Co., 333 Methuen St.
North Adams—*Koehler, W. S. Strauss.
Springfield—Locomobile, Stoddard Motor Car Co.
*Mack, International Motor Co.
Taunton—Abbott-Detroit, S. L. Foster.
Worcester—Abbott-Detroit, Maykel Auto Co.

MICHIGAN.

Grand Rapids—Enger, L. J. Manville.
Lansing—Chalmers, C. A. Triphagen.
Saxon, Mills Auto Sales Co.
Mt. Clemens—Buick, Nank & Priehs.
Muskegon—Allen, Geo. Newville.
Saginaw—Dixie Flyer, Roecker Bros.

MINNESOTA.

Ada—King, Union Motor Car Co.
Minneapolis—Dixie Flyer, R. & L. Motor Car Sales Co.
Roamer, Barclay Auto Co.
Ross, Fred Darling.
Two Harbors—Saxon, Emil Strom.

MISSOURI.

Higginsville—Maxwell, Dwight Bennett.
Kansas City—Cole, Cole Sales Co.
*Denby, Frank P. Kimber.
St. Louis—Abbott-Detroit, Locust Motor Sales Co.
Maxwell, Brinkman Motor Co.
Oakland, The Mississippi Valley Motor Co.
Sedalia—Briscoe, W. H. Reynolds.
Chalmers, W. H. Reynolds.
Springfield—Overland, Springfield-Overland Motor Co.

NEVADA.

Reno—Oldsmobile, Mark L. Yori.

NEW HAMPSHIRE.

Gorham—Abbott-Detroit, M. M. Willis.

NEW JERSEY.

New Brunswick—King, C. W. Quackenbush.
Summit—King, Ralph H. Collins.

NEW YORK.

Buffalo—*Atterbury, Sanford Street Garage.
Geneva—Abbott-Detroit, L. A. Cotton.
Utica—Oldsmobile, Beattle Motor Sales Co., 512 Burnett St.

NORTH DAKOTA.

Bowman—Crow-Elkhart, J. Julian.
Fargo—Dixie Flyer, Wheelock & Bathrick.
Overland, Doyle Bros.
*Republic, Horton Motor Co.
Fordville—Ford, Carl K. Thoe.
Saxon, Carl K. Thoe.
Maddock—Pullman, Joseph Heiling.
Noonan—Empire, William Wishart.

OHIO.

Cleveland—Empire, Apperson Cleveland Co.
King, King Cleveland Co.
Mercer, Trenton Motor Sales Co.
Paige, Euclid Motor Co.
Peugeot, Trenton Motor Sales Co.
*Stewart, H. S. Moore Sales and Garage Co.
Columbus—*Vim, Vim Motor Truck Sales Co.
Toledo—Dixie Flyer, Abbott Grandy Motor Sales Co.
Youngstown—Oakland, Mahoning Motor Co.

OKLAHOMA.

Dewey—King, Dewey Garage and Auto Livery.
Oklahoma City—Oakland, The Vesper Automobile Co.
Sapulpa—Oldsmobile, George A. Smith.

OREGON.

Eugene—Overland, Hays & Rosseau.
Willys-Knight, Hays & Rosseau.
Portland—Crow-Elkhart, Harrison Sons Co.

PENNSYLVANIA.

Bullion—King, E. M. Freck.
Butler—Abbott-Detroit, N. J. Troutman.
Freedom—King, Krepps & Mengel.
Irwin—Abbott-Detroit, Chas. Weaver.
Mifflintown—*Koehler, Juanita Sales Co.
Philadelphia—Abbott-Detroit, J. B. Maxwell.
Prosperity—King, J. E. Andrews.

RHODE ISLAND.

Providence—Apperson, Percival S. Clark.

SOUTH DAKOTA.

White—Oldsmobile, George Francis.

TENNESSEE.

Chattanooga—King, Mitchell Auto Co.
Knoxville—*Koehler, Cadillac Sales Co.

TEXAS.

Dallas—Allen, R. L. Cameron Auto Co.
*Commerce, J. A. McDaniel.
Farner—*Koehler, H. J. Crumley.
San Angelo—Allen, Texas Motor Sales Co.
Mitchell, Texas Motor Sales Co.

VERMONT.

Bennington—Abbott-Detroit, F. L. Bottom.
Burlington—Abbott-Detroit, R. M. Howard.

VIRGINIA.

Richmond—Saxon, Koehler Motor Co.

WASHINGTON.

Endicott—Chalmers, A. C. Smith.
Seattle—Abbott-Detroit, M. G. Farnsworth.
Spokane—Dodge Bros., H. F. McDonald.
Hudson, H. F. McDonald.
Tacoma—Allen, Standard Motor Car Co.
Tekoa—Chalmers, Smith & McGreevy.
Winchester—Hudson, E. B. McCarthy.

WISCONSIN.

Madison—Haynes, Chas. E. Marks.
Milwaukee—Marion, Stutz Motor Car Co.
Prentice—Chevrolet, James Ovans.

WYOMING.

Cheyenne—Abbott-Detroit, Harold Brinker.

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NEW BUILDING OPERATIONS.

Contracts Made and Plans Contemplated for Garages, Repair Shops and Service Stations.

In this department is presented a record from the various states of the plans and specifications in course of preparation by individuals and concerns, of the contracts awarded for the erection of new garages and the like, of additions, improvements and alterations either already made or under consideration, and of the business removals and new locations that have taken place within the past month.

Plans and Specifications.

Conway, Ark.; S. G. Smith; one-story garage and automobile sales room, 40x135; concrete floor.

Denver, Col.; Samuel Schoinburg; one-story garage, 62½x184; $15,000.

Denver, Col.; W. W. Watson; one-story garage, 98x115; $20,000.

Ft. Morgan, Col.; E. M. Gilleth, Sterling, Col.; two-story garage, 75x100; $8000.

Ansonia, Conn.; Samuel F. and E. F. Yudkin, 403 Main street; two-story public garage, 61x198.

Bridgeport, Conn.; A. S. Meloy, 17 Arcade; three-story commercial garage, 70x80; $35,000.

Bridgeport, Conn.; J. C. Edwards, 174 Park place; three-story garage, 70x90.

Greenwich, Conn.; Enders & Abrams, 87½ Greenwich avenue; two-story garage and sales room, 60x50.

Middletown, Conn.; August Johnson, 159 Spring street; one-story commercial garage, 60x70; $4000.

New Britain, Conn.; Frederick W. Williams; one-story commercial garage, 30x120.

Norwalk, Conn.; Howard Gans; one-story public garage, 60x82; $15,000.

Waterbury, Conn.; S. L. Gottlieb, 339 South Main street; one-story commercial garage, 20x48.

Washington, D. C.; D. J. Callahan, 1308 Euclid avenue, N. W.; three-story garage, 50x35; $35,000.

Chicago, Ill.; J. R. Smid & Co., 513 N. Dearborn street; one-story garage, 30x22.

Chicago, Ill.; A. Priess, 4846 Sheridan road; one-story public garage, 22x32; $5000.

Chicago, Ill.; Frederick W. Patterson, 834 East 43rd street; one-story public garage.

Chicago, Ill.; Mrs. A. Cleys, 4557 Clarendon avenue; one-story garage, 31x22.2; $2000.

Chicago, Ill.; C. H. Vindrake, 918 West 63rd street; one-story garage, 20x28.

Chicago, Ill.; J. M. Marks, 941 Winona avenue; one-story garage, 21x55; $3000.

Chicago, Ill.; Charles Vedra, 3734 West 26th street; one-story public garage, 110x45; $10,000.

Chicago, Ill.; Garfieldian Motor Station, W. Smith, president, 7816-18 West Madison street; two-story public garage, 54x158; $12,000.

Chicago, Ill.; Mark Henry, 422 Federal street; one-story garage, 50x235; $20,000.

Chicago, Ill.; James Swift, 4210 Washington boulevard; one-story garage, 52x123; $13,000.

Galesburg, Ill.; Duvon & Brown, 551 E. Main street; one-story garage and sales room, 60x140; $10,000.

Monticello, Ill.; John Pembroke; one-story garage, 60x80; $6000.

Oak Park, Ill.; H. Kaufman; one-story public garage, 50x140; $12,000.

Peoria, Ill.; Dr. C. G. Fornum, 216 Parkside avenue; two-story garage; $8000.

Peoria, Ill.; Hewitt & Emerson, 321 Main street; two-story private garage, 22x50; $4000.

Springfield, Ill.; Dr. George N. Kreider, 522 East Capitol avenue; two-story public garage, 80x143.

Angola, Ind.; E. A. Goodwin; one-story public garage, 55x125.

Avilla, Ind.; H. A. Moore; one-story public garage, 45x100; $5000.

Hammond, Ind.; H. A. Elsner, 83 State street; one-story public garage, 50x74; $5000.

Indianapolis, Ind.; W. Gilson Company, 418 N. Capitol avenue; five-story automobile sales room, office and repair shop, 135x195; $300,000.

Kokomo, Ind.; Dr. W. H. Martin, 210 N. Mulberry street; one-story public garage, 66x68.

Cedar Rapids, Ia.; George H. Doty; two-story garage, 60x140; $20,000.

Dallas Centre, Ia.; Brenton Brothers; two-story public garage, 44x80.

Des Moines, Ia.; Hubbell estate, Hubbell building; one-story public garage, 50x176; $15,000. Lessee, Fisk Tire Company, 911 Locust street.

Marion, Ia.; G. E. Groll; one-story public garage, 60x120.

Louisville, Ky.; Consolidated Realty Company, Inter-Southern building; fireproof garage, $20,000. To be occupied by Overland-Louisville Company.

Crowley, La.; E. L. Vinet; one-story garage and machine shop, 100x50.

Fort Kent, Me.; Hetherington & Mallett; one-story public garage; $15,000.

Baltimore, Md.; E. W. Marcus, 2249 Eutaw place; three-story garage, 40x76.

Baltimore, Md.; Citipco Realty Company, 2 E. Lexington street; one-story garage, 45x250; $10,000.

Chevy Chase, Md.; Judge George H. Perkins, Connecticut avenue and Melrose street; one-story garage, 35x26; $2000.

Boston, Mass.; Lyman Spaulding, 29 Melville avenue; one-story private garage, 14x22.

Boston, Mass.; J. Carpenter, Jr.; four-story public garage, 80x100.

Boston, Mass.; J. H. Broderich; five-story garage, 100x200; $80,000.

Chicopee, Mass.; Louis Falomis, 194 Centre street; one-story public garage, 30x50; $6000.

Falmouth, Mass.; R. Crane; two-story private garage, 36x25.

Haverhill, Mass.; Haverhill Electric Company, 161 Water street; two-story garage, 60x55.

Holyoke, Mass.; A. D. Durocher, 49 Cabot street; one-story garage, 50x47.

Holyoke, Mass.; Victor Lanlier; one-story garage, 30x32.

Malden, Mass.; E. T. Hazen, 706 Salem street; one-story public garage, 67x124; $10,000.

Newton Centre, Mass.; W. R. Holt; one-story garage, 23x24.

Randolph, Mass.; Cartwright & Hurley; one-story garage, 30x60; $4000.

Salem, Mass.; Goldberg Brothers; two-story public garage, 60x80; $20,000. Lessee, Witch City Garage Company.

Springfield, Mass.; C. Santinello; one-story garage, 50x75.

Waltham, Mass.; Willis C. Deering, 220 Devonshire street, Boston; one-story garage, 20x24.

Worcester, Mass.; Packard Motor Car Company; one and two-story garage and sales room, sales department, one and two-story, 16x70; service department, one and two-story, 331x75.

Worcester, Mass.; David Shapiro, 122 Green street; one-story garage, 60x190; $20,000.

Worcester, Mass.; Alexander B. Campbell, 314 Main stret; four-story garage, 46x80.

Worcester, Mass.; Max Goldstein, 5 Mendon street; one-story public garage, 34x40.

Birmingham, Mich.; A. B. Conklin, Wooster block; 1½-story garage, 20x20; $1000.

Detroit, Mich.; Frederick Quellette, two-story garage, 30x40.

Grand Rapids, Mich.; Dudley E. Waters; two-story garage, 60x100; $10,000.

Grosse Pointe, Mich.; Paul C. Kroske, 1106 David Whitney building, Detroit, Mich.; two-story garage, 35x30.

Dexter, Mo.; A. H. Carter; one-story garage; $7000.

Kansas City, Mo.; Ford Motor Company, Highland Park, Mich.; service station, two-story, 50x110; three-story, 75x110; $200,000.

St. Louis, Mo.; Burdean Realty Company, 713 Chestnut street; two-story automobile sales room, 45x120; $20,000.

St. Louis, Mo.; Dr. J. F. Shoemaker, 4499 Lindell boulevard; one-story garage, 42x25.

St. Louis, Mo.; R. A. and G. B. Bullock, Tullerton building; one-story garage, 30x20; $3000.

Webster Grove, Mo.; H. C. Wallace; one-story garage, 50x150; $10,000.

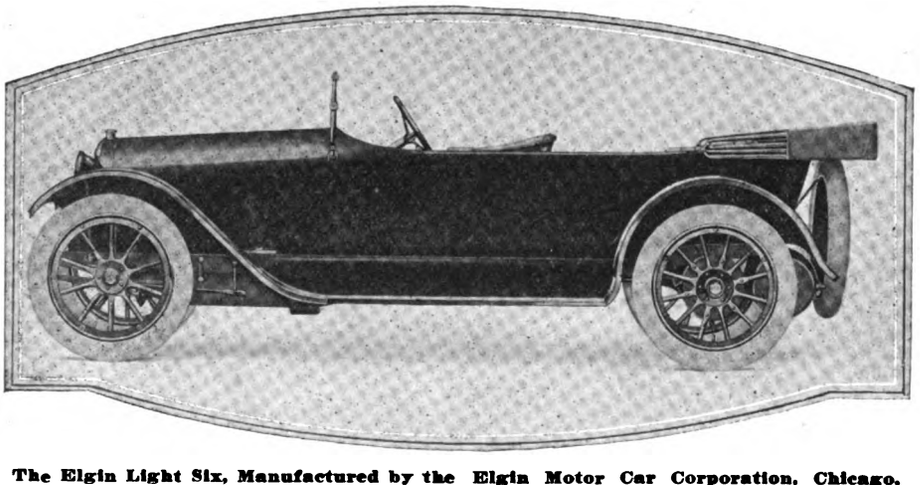
Albion, Neb.; Eacker Auto Company; two-story garage, 44x132.

Omaha, Neb.; M. Andrews; one-story garage, 44x120; $8000.

Rochester, N. H.; James Specco; one-story garage, 50x100.

Bridgeton, N. J.; G. R. Edell; one-story garage, 50x100; $8000.

Camden, N. J.; Camden Heating Company, corner 8th and Market streets; one-story garage, 25x72, and 24x90; $5000.



The Elgin Light Six, Manufactured by the Elgin Motor Car Corporation, Chicago, Ill.; Price, $845—Complete Description in The Automobile Journal, Aug. 10, 1916.

Motor, Six-Cylinder, Valve-in-Head.
Bore and Stroke, three by 4½ Inches.
Horsepower (Brake), 35.
Carburetor, Rayfield.
Lubrication, Force Feed Splash.
Clutch, Multiple Disc Dry Plate.
Cooling, Thermo Syphon.
Ignition, Delco (Automatic).
Starting and Lighting, Dyneto, Two Unit.
Rear Axle, Three-Quarter Floating.
Tire Sizes, 32 by 3½.
Wheelbase, 114 Inches.

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Convent Station, N. J.; George P. Schmidt; 1½-story garage, 25x26; $3000.

Elizabeth, N. J.; Louis Gordon, 29 Alton street; one-story public garage, 100x120; $8000.

Montclair, N. J.; Daniel L. Mulvey, 33 James street; one-story garage; $76,000.

Newark, N. J.; Joseph Weisberger, 98 Hunterdon street; one-story garage, 75x100; $6000.

Newark, N. J.; Frank Di Perti; one-story public garage, 40x50; $5000.

Newark, N. J.; Goerke Company, 701 Broad street; one-story public garage and automobile show room, 75x100; $12,000.

Newark, N. J.; Charles Fiedman, 3 Beacon street; one and two-story public garage, 50x100; $8000.

South Orange, N. J.; William W. Trimpi, 457 Center street; two-story public garage and chauffeur's quarters; 24x50; $7000.

Trenton, N. J.; City of Trenton; two-story garage, 60x88.

Trenton, N. J.; William Allfather; one-story garage, 16x32; $2500.

West Hoboken, N. J.; N. N. Trabilcy, 516 Monastery street; two-story garage, 83x100; $25,000.

Albany, N. Y.; P. F. Doland Company, 30 South Pearl street; three-story garage, 30x186; $40,000.

Beacon, N. Y.; H. M. White, 273 Main street; one-story public garage, 50x100.

Brooklyn, N. Y.; August Diedrick, 97 Van Buren street; two-story garage; $11,000.

Brooklyn, N. Y.; Henry Biez, 185 Etna street; one-story garage, 80x100; $10,000.

Brooklyn, N. Y.; Henry D. Loft, 591 Ocean avenue; one-story garage, 32x32; $3500.

Brooklyn, N. Y.; Charles J. Goebel, 558 Macon street; one-story garage, 50x100; $7000.

Brooklyn, N. Y.; John Burke, 372 Union avenue; one-story garage, 30x50; $5000.

Brooklyn, N. Y.; Garage Colony; one-story garage, 50x100; $9000.

Brooklyn, N. Y.; Michael Tusch, 855 Park place; one-story garage, 50x129; $8000.

Brooklyn, N. Y.; Walter B. Wills, 1181 Myrtle avenue; one-story garage, 60x200; $35,000.

Brooklyn, N. Y.; Lancashire Realty Co., 44 Court street; one-story garage, 63x130; $20,000. Lessee, C. T. Silver Motor Company, Inc., 1758 Broadway.

Brooklyn, N. Y.; Knickerbocker Ice Company, 1480 Broadway, New York City; one-story garage, 42x113; $8000. W. N. Oler, president; H. C. Harrison, secretary.

Brooklyn, N. Y.; August Diedrick, 97 Van Buren street; one-story garage, 60x200; $35,000.

Brooklyn, N. Y.; Morris Hosch, 672 Fifth avenue; one-story garage, 35x100; $6000.

Brooklyn, N. Y.; Francis Hutchinson, 549 Nostrand avenue; one-story garage, 40x97; $6000.

Brooklyn, N. Y.; William M. Clader, 1648 11th avenue; one-story garage, 140x98; $20,000.

Bronxville, N. Y.; W. D. Kraft, one-story garage, 25x70; $10,000.

Buffalo, N. Y.; Ernest S. Fenwick Company, Ellicott square; one-story garage, 20x20.

Derby, N. Y.; Edward Michael, Brisbane building, New York City; two-story garage, 40x60; $20,000.

Flushing, L. I., N. Y.; A. H. Schmidt, 49 Murray street; one-story garage, 45x100; $8000.

Long Island City, L. I., N. Y.; A. G. Pipitone, 291 Eighth avenue; one-story garage, 25x65; $5000.

Mt. Kisco, N. Y.; Thomas L. Kerby, 6 E. 23rd street, New York City; two-story garage, 34x108.

New York, N. Y.; Henry J. Semke, corner 192nd street and Grand Concourse; one-story garage, 168x67; $15,000.

New York, N. Y.; Interboro Rapid Transit Company, 165 Broadway; one-story garage, 53x110; $11,000.

New York, N. Y.; T. F. Dunn, Palisade Junction, Palisade, N. J.; two-story garage, 80x100; $20,000.

New York, N. Y.; Daniel Meeham, 1966 Broadway; six-story garage, 100x100; $130,000.

New York, N. Y.; Yockel Brothers, 1058 Washington avenue; one-story garage, 58x180; $10,000.

New York, N. Y.; Luella M. Rice, 2191 Ryer avenue; one-story garage, 103x111; $15,000.

New York, N. Y.; Tremont Architectural Company, corner Webster and Tremont avenues; six-story garage, 150x90; $50,000.

New York, N. Y.; Wendover Hall Company, 1662 Beston road; three-story garage, 101x232; $20,000.

New York, N. Y.; A. M. Gray, 1402 Broadway; three-story garage, 172x100; $70,000.

New York, N. Y.; Eugene Haggin, 1 Madison avenue; two-story garage, 42x100; $8000.

New York, N. Y.; William C. Berger, 1932 Arthur avenue; two-story garage, 152x68; $25,000.

New York, N. Y.; Ahnenian & Younkhure, 3320 Bailey avenue; two-story garage, 50x141; $15,000.

New York, N. Y.; Jacob Levy, 18 W. 115th street; four-story garage, 40x100; $30,000.

New York, N. Y.; Max Greenberg, 302 East 82nd street; two-story garage, 50x102; $25,000.

New York, N. Y.; Max A. Cramer, 153 East 79th street; five-story garage, 75x100; $100,000.

New York, N. Y.; Samuel Rouse, 266-272 W. 135th street; one-story garage, 100x99; $15,000.

New York, N. Y.; Williams D. Straight, 17 E. 70th street; three-story garage and chauffeur's quarters, 60x50.

New York, N. Y.; Wylie, Carey, Thayer Company, 7 East 42nd street; five-story co-operative garage, 50x100.

New York, N. Y.; William Bradley, 1 Madison avenue; three-story public garage, 231x100; $100,000. Lessee, Brown Taxicab Company.

New York, N. Y.; Charles Volk, north side of Terrace place, east of Eagle avenue; one-story garage, 41x50; $3000.

New York, N. Y.; J. R. Peterson, 1562 Crotona Park; 80 garages, one-story, $1500 each.

New York, N. Y.; Christian Vorndran, 412 E. 147th street; one-story garage, 75x75; $20,000.

Oneida, N. Y.; Coles Tools and Machine Company; one-story garage and machine shop, 60x140; $16,000.

Richmond Hill, L. I., N. Y.; J. Johnston; one-story garage, 139x50 by 129x23; $8000.

Schenectady, N. Y.; Michael De Feo, 520 Center avenue; one-story public garage, 35x65; $4500.

Schenectady, N. Y.; Indiana Garage Company, 807 Grant avenue; one-story garage, 34x65; $4000; W. H. Noonan, secretary.

Syracuse, N. Y.; E. A. Howard, 503 Bastable building; one-story garage, 100x200.

Minot, N. D.; P. W. Miller and S. C. Stearns; three-story garage, 103x22x89 and wing 55x101. Lessee, Minot Auto Company.

Akron, O.; R. Weiss, 645 N. Howard street; one-story garage, 30x40; $1000.

Cleveland, O.; Willys-Overland Company, Toledo, O.; four-story sales room and service station; $100,000.

Cleveland, O.; F. M. Halett Company, Erie building, 1½-story garage, 37x70; $12,000.

Cleveland, O.; William Dunbar Company, 8201 Cedar avenue; one-story garage, 22x60; $5000.

Cleveland, O.; Cleveland Telephone Company, Allard Smith, general manager; one-story garage, 60x120; $15,000.

Cleveland, O.; G. B. Walkey; one-story garage, 50x96; $5000.

Cincinnati, O.; John Ryan, 333 Court street; one-story public garage, 25x100; $10,000.

Cincinnati, O.; Mary N. Hanson, 58 W. McMillan street; two-story public garage, 20x21; $2000.

Greenville, O.; Connor & Mathews; one-story garage, 40x40; $6000.

Greenville, O.; Walter Buchanan; two-story garage, 32x42.

Bartlesville, Okla.; J. L. Overlees; one-story garage, 100x140; $15,000.

Mangum, Okla.; H. M. Ferguson; one-story stone garage, 50x120; brick front; concrete floor.

Tulsa, Okla.; Joseph E. Washington; one-story brick garage, $16,000.

Beaver, Penn.; Snyder Bros. & Bonzo; one-story garage, 60x174; $20,000.

Bethlehem, Penn.; Edward S. Kneisley; one-story garage, 21x28; $2000.

Hazleton, Penn.; Pennsylvania Central Brewing Company, corner Mine and Mill streets; one-story garage, 50x64; $4000.

Norristown, Penn.; Atlantic Refining Company, 3144 Passyunk avenue, Philadelphia, Penn.; one-story garage, 29x52.

Oakmont, Penn.; Perry McCurdy; one-story commercial garage, 50x75.

Philadelphia, Penn.; Shore & Dodge; two-story automobile building at 249-53 N. Juniper street. The building, which will contain 10,000 square feet, will be used for garage and warehouse purposes by the Standard Supply and Equipment Company.

Philadelphia, Penn.; Strawbridge & Clothier; one-story garage, 100x200.

Philadelphia, Penn.; Packard Motor Car Company, corner Broad and Wood streets; eight-story show room and service station, 185x70; $200,000. L. J. Eastman, manager.

Philadelphia, Penn.; Mrs. Lilly K. Daut, 110 Edgemont street; one-story garage, 16x63.

Pottsville, Penn.; J. L. N. Channell, 571 East Norwegian street; one-story garage, 20x20; $2000.

Scranton, Penn.; Samuel Sampter, 220 Lackawanna avenue; one-story garage, 28x32; $2000.

Wynnefield, Penn.; H. Rex Stackhouse, Drexel building, Philadelphia, Penn.; two and three-story garage, 60x32 and 18x12.

Wynnewood, Penn.; Thomas B. Brown; 1½-story garage, 24x26; $3000.

Providence, R. I.; Thomas Quinn; one-story public garage, 60x103; $9000.

Providence, R. I.; Thomas Grimes & Bro., Inc., 191 S. Main street; two-story garage, 45x80; $10,000.

Providence, R. I.; Peckham Bros. Co., 78 Mathewson street; one-story garage and sales room, 100x125; $18,000.

Providence, R. I.; Mexican Petroleum Corporation, 164 Allen avenue; one-story public garage; 78x84; $7500.

Anderson, S. C.; A. L. Todd; two-story reinforced concrete garage, 70x120. The building will be occupied by Anderson Automobile Company.

Memphis, Tenn.; Memphis Motor Car Company, 157 Monroe avenue; two-story garage; $25,000.

Waco, Texas; E. W. Marshall; one-story automobile building, 55x75; $7000. Lessee, Waco Mitchell Auto Company.

Norfolk, Va.; A. T. and Norman Hofhimer; fireproof garage building, 52x158; granolithic floor; contains 30 private garages, each 11x18; with space for washing and repairing machines.

Richmond, Va.; Edward L. Frost, 1316 E. Cary street; 1½-story garage and sales room; $12,000.

Burlington, Wis.; Hugh Agner Garage; one-story garage, 165x59; $6000.

Burlington, Wis.; Leiser Holst, Germanina building; one-story garage, 60x165; $20,000.

Milwaukee, Wis.; D. L. MacDowell, 563 Newberry boulevard; 1½-story garage, 26x27; $2500.

Milwaukee, Wis.; Charles B. Piper, corner Olive street and Denner avenue; one-story garage, 14x28; $3000.

Rhinelander, Wis.; Morgan Garage and Auto Supply Company; two-story garage, 60x140; $12,000. J. G. Morgan is manager.

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Factories, Garages and Repair Shops.

Denver, Col.; F. C. Cullen is erecting a two-story service station. He handles the Studebaker cars.

Parker, Col.; Woodbury & Davis are building a $2000 brick garage. It will be 45 by 75 feet and one story high.

New Haven, Conn.; The White Motors Company will erect a large two-story building at 264-266 Crown street. The company has the agency for White, Chalmers and Buick cars.

Chicago, Ill.; The Mitchell Automobile Company has leased the three-story concrete building which is being erected at 2334 Michigan avenue.

Richmond, Ill.; E. M. Stewart will build a large garage.

Kokomo, Ind.; Neary Brothers are erecting an addition 50 by 100 feet.

Evansville, Ind.; The A. L. Maxwell Company will erect a large garage. It will be 45 by 145 feet and three stories high.

Des Moines, Ia.; The Schee Motor Company will build a new Studebaker service station at West 17th street and Grand avenue, to cost $20,000.

Coats, Kan.; F. R. Plummer is now occupying his new garage and repair shop.

Wichita, Kan.; Will G. Price is erecting a garage at English street and Topeka avenue.

Leslie, Mich.; Charles Sweet is erecting a new garage.

St. Johns, Mich.; N. Wendell is erecting a new garage at Spring and Highan streets.

Hazel Run, Minn.; Nerdahl & Co. is building a tile garage.

Henning, Minn.; J. B. Thompson is erecting a large garage.

Mankato, Minn.; The J. B. Nelson Construction Company will erect a new building to handle the local Ford agency at 630 South Front street.

Albany, Mo.; B. F. Hardin is remodelling a building for garage purposes.

Anaconda, Mont.; William Barth is erecting a public garage to cost $20,000; it will be located on the southeast corner of Clark and Mercury streets.

Reed Point, Mont.; S. I. DeFrance is building a garage, 45 by 50 feet.

Brooklyn, N. Y.; Nathan Harris, 920 Eastern parkway, will occupy the garage which is being erected in Carroll street.

Brooklyn, N. Y.; Milton L. Reeves is building a one-story brick garage on Madison street, at the cost of $7000.

Brooklyn, N. Y.; Alwyn Young, 1144 Flatbush avenue, is erecting a five-story garage at a cost of $50,000.

Dolgeville, N. Y.; John P. Jones is erecting a garage on North Main street.

New York, N. Y.; Stephen H. Jackson is erecting a four-story modern garage at 54 Watt street at a cost of $40,000.

New York, N. Y.; Christian Vordan, 412 East 147th street, is erecting a one-story modern garage at a cost of $20,000.

Grand Forks, N. D.; The McKinney-Fuller Motor Company will erect a two-story brick garage on Third street and International avenue.

Ray, N. D.; S. E. Hursh is erecting a concrete and brick garage, 50 by 80 feet.

Cleveland, O.; Jacob Babin, 1316 E. 115th street, is erecting a garage at a cost of $18,000.

Columbus, O.; The Columbus Cadillac Company will erect a modern two-story sales room and service station at Broad and Sixth streets. They have the agency for the Cadillac in central Ohio.

Columbus, O.; H. B. Monett is erecting a two-story garage at Gay and Young streets.

Dayton, O.; L. W. Lees Campbell is erecting a modern fireproof garage on Fayette street.

Fremont, O.; Fred Durnwald of the Palace Garage, is erecting a garage and repair shop, 66 by 120 feet, on West State street.

Toledo, O.; Grasser Motor Company, Madison avenue and 16th street, is erecting a garage, 100 by 100 feet, at a cost of $100,000.

Youngstown, O.; Thompson Motor Car Company is erecting a garage at Market and Henry streets.

Portland, Ore.; J. E. Foley is erecting a one-story garage on Washington street.

Portland, Ore.; M. G. Thorsen is building a two-story brick and concrete garage on Washington street at a cost of $25,000.

Portland, Ore.; Zanello & Sons is erecting a one-story garage at 215 16th street.

Lead, S. D.; A. J. Johnson will build a garage.

El Paso, Tex.; El Paso Overland Auto Company is erecting a new building at Santa Fe and San Francisco streets.

El Paso, Tex.; Mesa Auto Supply Company is erecting a one-story automobile supply and gasoline station at a cost of $1000.

Ft. Worth, Tex.; A. P. Mitchell is erecting a new building at the corner of Fifth and Commerce streets at a cost of $12,550.

Philadelphia, Penn.; George D. Mershon, Jr., is erecting a two-story garage at 4605 N. Carlisle street.

Pittsburg, Penn.; John G. Burns, 400 Roup street, is erecting a garage on Baum boulevard.

Tarentum, Penn.; William Hodge is erecting a modern garage on East Seventh street.

Alterations, Improvements and Additions.

Saugus, Cal.; The Saugus Garage has been remodelled by widening and the addition of a concrete pit and cement floor.

Chicago, Ill.; Buena Park Auto Station, 4132 Clarendon avenue, has completed an addition to the station of 9000 square feet.

Chicago, Ill.; The Tennant-Oakland Company is enlarging its plant by adding a one-story building at 2427 Wabash avenue for its service organization.

Woodstock, Ill.; E. R. Goodrow & Son will occupy the north room in the Tie barns on Throop street, which has been remodelled into a garage.

Franklin, Ind.; Van Vleet Garage is being remodelled.

Creston, Ia.; Seeberger Garage, 409 W. Adams street, has been completed.

Dodge City, Kan.; The Riverside Garage and Machine Shop is enlarging its quarters and adding to its equipment of machinery. Frank Gingrich and Paul Elgin are the proprietors.

Home City, Kan.; The Independent Garage is being rebuilt and enlarged.

Phillips, Me.; Rollins & Bean have enlarged their garage.

Franklin, Mass.; The Abbott Garage has completed the first of several additions to its plant.

Gulport, Miss.; Daniel Kroll Company, 25th avenue, is enlarging its quarters.

Chadron, Neb.; F. A. Plummer and Earl Wheeler have converted the old bottling works into a garage.

Nickerson, Neb.; A. Sinamark and C. W. Jordan have leased a building in North Bend, Neb., which will be remodelled for a garage and sales room.

Rochester, N. H.; Phillip Garage on South Main street is being enlarged by a fireproof addition.

New York, N. Y.; The William Kruass Garage Company will erect an addition to its garage at 221-227 West 99th street.

Norwalk, O.; Smith Brothers, Woodlawn avenue, are erecting an addition 20 feet wide.

Tuttle, Okla.; H. W. Duckwall is building an addition, 40 by 40 feet.

Seattle, Wash.; Chanslor & Lyon have leased 5000 feet of additional floor space for their car department.

Spokane, Wash.; The Seven Seven Company, distributor of the Dodge Brothers, will build a one-story brick addition to its present quarters, 50 by 60 feet.

Wheeling, W. Va.; The Lincoln Garage, on 16th street, has increased its storage room by building a second story. The storage capacity of the garage is now 55 cars.

Milwaukee, Wis.; The Gauder, Paeschke & Frey Company, which recently opened a division for supplying motor car manufacturers, is adding 35 by 130 feet to its main shop building.

New Business Locations and Removals.

Pueblo, Col.; Motor Sales Company has moved from Main street to the Ideal Garage, near Ninth and Main streets.

Chicago, Ill.; The James Motor Company found it necessary on account of the increase in business to lease larger quarters at 1718 Indiana avenue.

Chicago, Ill.; B. J. Millard has moved into quarters at 221-23 E. 22nd street, where he conducts a garage and repair shop.

Newcastle, Ind.; The Central Garage has moved from the Kidder Machine shop to the building at Papper Mills square, formerly occupied by George C. Fowler.

Pratt, Kan.; Swinson & Shafer has moved to the new garage at Main and First streets.

New Orleans, La.; Louisiana Motor Company has moved into its new quarters at 621 St. Charles avenue.

Boston, Mass.; The General Vehicle Company has moved from Cambridge to larger quarters at 592 Commonwealth avenue.

Boston, Mass.; The Oakland Motor Company has moved from Massachusetts avenue to Beacon street.

Boston, Mass.; Remy Electric Company has moved from 214 Pleasant street to 8 Motor Mart.

Brighton, Mass.; The Anthony-Pilling Company, agent for the Marion car, has moved to Washington street.

Cambridge, Mass.; The Boston sales branch of the Metz Motor Car Company has moved from Boylston street to 195 Massachusetts avenue.

Detroit, Mich.; Grass Motor Company, agent for Hupmobile cars, has moved to 1299 Woodward avenue.

Grand Rapids, Mich.; The American Auto Supply Company has moved from 113 Crescent N. W. to 16 Fulton street.

Grand Rapids, Mich.; The Barkwell Buick Company is now located at 66 Sheldon avenue, S. E. The first floor will be used for offices and sales rooms and the second for storage and repair purposes.

Kansas City, Mo.; Harry S. Earhart, dealer in used cars, has removed to his new building at 1726-28 Walnut street. He was formerly located at 16th and Walnut streets.

Franklin Falls, N. H.; Herbert & Turcotte have moved the Central Garage business into new quarters.

Buffalo, N. Y.; Mack's Auto Sales Company has changed its location to 1474 Main street, opposite Woodlawn avenue.

New York, N. Y.; Burd Ring Sales Company has moved into its new home at 1864 Broadway.

New York, N. Y.; The Times Square Automobile Company has removed its used car department from 56th street and Broadway to 334-336 West 44th street.

Oakes, N. D.; C. E. Knox and J. F. Nichols are building a garage.

Troy, O.; Troy Auto Supply Company is building an addition, 70 by 16 feet.

Frederick, Okla.; Huffine Motor Company has moved to the Palace Hotel building, South Ninth street.

Muskogee, Okla.; Hoffman Sales Agency has moved into new quarters on Okmulgee avenue.

Aberdeen, S. D.; L. J. Case has moved to 419 South Main street.

Seattle, Wash.; The Edison Storage Battery Company has opened new quarters at 65 Columbia street, with Foster C. Gibson as manager.

Tacoma, Wash.; The Guarantee Auto Repair Company has secured a new location at 1306-8 Tacoma avenue and is open for business.

Black River Falls, Wis.; Hogg & McManners have moved into their new fireproof garage on First street.

Bloomer, Wis.; The Peil Garage is adding a two-story shop, 36 by 68, to its garage and will have a building 64 by 138 feet when the improvements are completed. The concern handles the Maxwell, Grant and Chandler.

Fond du Lac, Wis.; Johnson Motor Car Company has moved to 35-37 S. Macy street.

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NEW YORK AND DETROIT EXCHANGE QUOTATIONS.

Condition of Automobile Securities and General Material Markets as Reported at the Middle of Last Month and on the Corresponding Day of this Month.

The tabulations following show the advance or decrease in the quoted stock exchange prices of the several active motor vehicle and kindred securities, and of the change in prices of the general material market, as it relates to the motor car industry.

	July 13		Aug. 10	
	Bid	Asked	Bid	Asked
Ajax Rubber Co.	64½	65½	63	66
J. I. Case, pfd.	82	90	85	90
Chalmers Motor, com.	93	101	98	101
Chalmers Motor, pfd.	173	176	170	180
Chandler Motor Co.	110	111	102	104
Chevrolet Motor, pfd.	228	230	187	195
Electric Storage Battery.	..	..	..	..
Firestone Tire, com.	880	..	915	930
Firestone Tire, pfd.	112	114	111	113
Fisk Rubber Co., com.	..	160	120	160
Fisk Rubber Co., 1st pfd.	114	120	112	120
Fisk Rubber Co., 2nd pfd.	120	..	120	..
General Motors, com.	470	541	500	520
General Motors, pfd.	110	112	113	116
Goodrich, B. F., com.	74	74¾	70⅛	70⅝
Goodrich, B. F., pfd.	113⅛	113½	113⅝	114
Goodyear Tire, com.	225	230	223	238
Goodyear Tire, pfd.	105	107	106½	107
Grant Motor Car Co.	11	12	8	9
Hupp Motor, com.	7½	7¾	..	..
Hupp Motor, pfd.	80	110	..	..
International Motor, com.	..	9	5	8
International Motor, pfd.	..	25	18	23
Kelly-Springfield Tire, com.	69	71	70	71
Kelly-Springfield Tire, pfd.	..	..	96	97¼
Lee Rubber and Tire Corp.	46⅜	46½	43	44
Maxwell Motor, com.	78	79¼	77	77½
Maxwell Motor, 1st pfd.	84½	85	83¾	86
Maxwell Motor, 2nd pfd.	54	56	54½	57
Miller Rubber, com.	225	230	225	235
Miller Rubber, pfd.	104	106	104	106
New Departure, com.	..	..	..	..
New Departure, pfd.	..	..	..	..
Packard Motor Car, com.	..	180	170	180
Packard Motor Car, pfd.	100	104	100	104
Paige-Detroit Motor Car.	..	50	45	50
Peerless Motor Truck Corp.	24	25	20½	22
Portage Rubber, com.	117	120	115	118
Portage Rubber, pfd.	118	119	115	118
Regal Motor Truck Co.	..	..	17	21
Reo Motor Car.	36½	37	36½	37½
Reo Motor Truck.	43	44	42½	43½
Saxon Motor Car Co.	..	..	67	72
Standard Motor Co.	5	7	5	7
Stewart-Warner, com.	100	102	101½	102½
Stewart-Warner, pfd.	..	..	..	..
Stromberg Motor	..	..	41½	41¾
Studebaker, com.	132⅝	132¾	125¼	125⅝
Studebaker, pfd.	108	110	109	111
Stutz Motor	..	..	63⅝	64
Swinehart Tire	63	63⅝	100	105
Texas Co.	..	..	..	..
United Motor Corp.	86	88	..	..
U. S. Rubber, com.	52½	53	53¼	54¼
U. S. Rubber, 1st pfd.	110⅛	110⅝	108¼	109
Vacuum Oil	..	..	..	..
White Motor Co.	54¼	55	51½	53
Willys-Overland, com.	74¾	75	51¾	52
Willys-Overland, pfd.	107	109	104	104¾

DOMESTIC CRUDE OIL PRICES.

The prices of crude petroleum at the wells during the middle of the month of August were:

Pennsylvania dark	$2.40	Corsicana heavy	$.60
Mercer black	1.90	Electra	1.15
Cabell	1.92	Henrietta	1.15
New Castle	1.90	Caddo, La., 38°	1.15
Corning	1.90	Caddo, La., heavy	.60
Wooster	1.80	Plymouth	1.38
North Lima	1.48	California oil	68-72
South Lima	1.48	Healdton	.70
Indiana	1.38	Moran	1.25
Princeton	1.52	Strawn	1.15
Somerset 32°	1.75	Thrall	1.15
Ragland	.70	De Soto	1.25
Illinois above 30°	1.52	Crichton	.60
Kan. & Okla.	1.15	Canada	2.03
Corsicana light	1.15		

Naphtha.

	10-gal. drums	
	Under 100 cases	100 cases and over
Benzine, 59-60°	29¼	29
73 a 76°	42	41½
Stove	34½	34
Auto, 68-72°	33	33¾

	In cans and cases		
	Under 100	100-199	200-299
Benzine, 59-62°	..	29¼	29
73 a 76°	37¼	37	36¾
Stove	..	34½	34
Auto, 68-72°	42	37	36¾

NEW YORK CITY PRICES.

New York City prices for petroleum and its products were:

Petroleum.

Crude, barrels, a gallon	15a18	Fuel, 31°	9
Refined, barrels	12	Fuel, 34°	9¼
Tank wagons delivery	9		

Naphtha.

Auto in wood	23	V. M. & P. deod., in steel	23
Auto in garages, steel bbls.	24	V. M. & P. deod., in wood	25

Gasoline.

Gas machine, steel	37	68-70° steel	29
73-76°	32	68-70° wood	32
73-76° wood	35		

GENERAL MARKET PRICES.

	July 14	Aug. 10
Antimony	15½	10½
Iron, foundry, S., ton	15.00	14.00
Iron, foundry, N., ton	19.50	19.00
Iron, Bessemer, ton	20.50	20.00
Steel, Bessemer, ton	40.00	43.00
Beams and chan., 100 lbs.	2.669	2.769
Copper, elec., 100 lbs.	26.50	26.75
Copper, lake, 100 lbs.	26.50	26.75
Lead, 100 lbs.	6.40	5.95
Tin, 100 lbs.	38.50	38.00
Petroleum, Penn., cr., bbl.	2.60	2.40
Petroleum, Kan., cr., bbl.	1.55	1.15
Linseed oil, raw	69	70
Rapeseed oil, refined	92	90
Lard oil, prime	1.10	1.05
Fish oil, Menhaden, br.	55	55
Sulphuric acid, 60	3.00	3.00
Cyanide potash, lb.	....	....
Cottonseed oil, bbl.	10.78	9.40
Silk, raw, Italy	5.90	6.00
Silk, raw, Japan	5.40	5.47½
Rubber, fine, up-river, Para	68	65
Tire, scrap	5¾	5¾
Steel, open hearth, ton	42.00	42.00

FOREIGN TRADE OPPORTUNITIES.

Address Bureau of Foreign and Domestic Commerce, Washington, D. C., Giving Number, Which Will Forward Correspondence, Unless Otherwise Stated.)

Automobiles, Motors, Etc. No. 21,904—A merchant in Spain informs an American consular officer that he is in the market for leather, cinematograph films, cordage, groceries, automobiles, motors and paper pulp. References given. Correspondence may be in English.

Automobiles, Tires, Plumbing Supplies, Etc. No. 21,953—A commercial agent of the bureau reports that a business man from Denmark is now in this country for the purpose of establishing commercial relations with American manufacturers of plumbing supplies, rubber ties, automobiles, auto trucks, motorcycles, electrical apparatus, electrical novelties, typewriters, office supplies, druggists' supplies and general merchandise. References.

Motor Cars. No. 21,997—A firm in the Netherlands requests the bureau to place it in touch with manufacturers of motor cars in the United States.

Motorcycles. No. 22,045—A motorcycle dealer in Norway informs an American consular officer of his desire to be placed in communication with American manufacturers of motorcycles. Correspondence may be in English. Quotations f. o. b. New York. Cash against documents will be paid.

Tires and Rims. No. 22,092—A manufacturer of athletic goods and traveller's supplies in Spain informs an American consular officer that he is desirous of importing tires for bicycles and wooden finished rims. Correspondence should be in Spanish. Reference is given.

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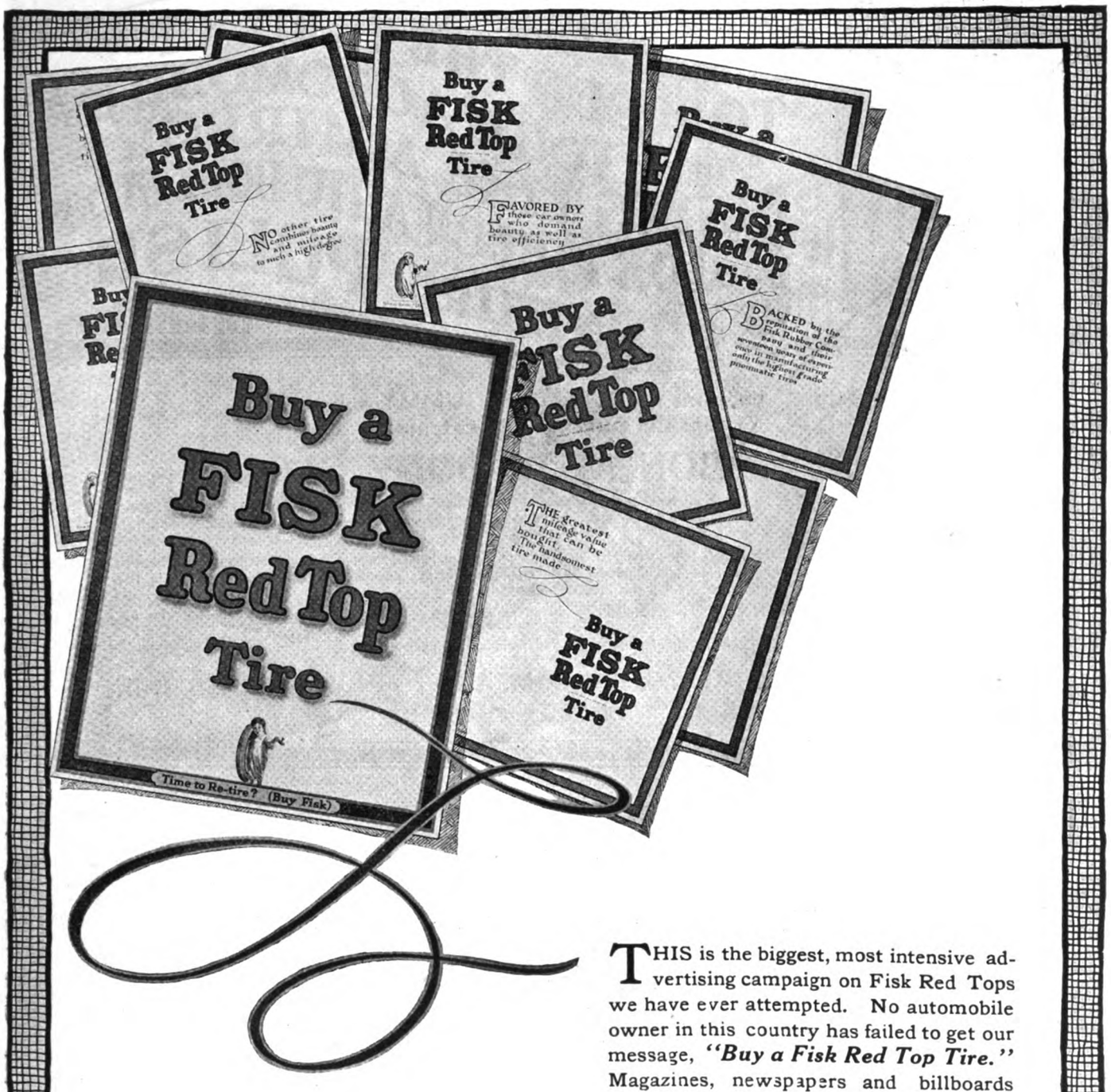

THIS is the biggest, most intensive advertising campaign on Fisk Red Tops we have ever attempted. No automobile owner in this country has failed to get our message, ***"Buy a Fisk Red Top Tire."*** Magazines, newspapers and billboards carried our advertising everywhere.

Our advice to you also is. ***"Buy Fisk Red Top Tires."*** Buy enough to take care of the enormous demand for Red Tops that this advertising is creating. Get in touch with the nearest Fisk Branch and place your Red Top order immediately—***now.*** Get your share of Red Top profits.

Time to Re-tire?
(Buy Fisk)

THE FISK RUBBER COMPANY
of N. Y.
Chicopee Falls Massachusetts

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TO KEEP THE BODY OF YOUR AUTOMOBILE SHINING LIKE A MIRROR USE BLUE RIBBON AUTO BODY GLOSS AND FURNITURE POLISH

Absolutely contains no WAXEY or GUMMY substances.
Does not coat the surfaces and catches no dust.

BLUE RIBBON AUTO BODY GLOSS

is a scientific "tonic" which revives and renews all highly finished, varnished and enamelled surfaces. It keeps the finish flexible and full of life, which prevents the original gloss from becoming dead or dull looking.

WAX and GUM preparations simply coat the surface. The coating soon becomes dead. Then it cannot be removed. This ruins the original gloss and finish. Lastly, repainting and refinishing is the only remedy. Ask any expert or practical painter or chemist.

BLUE RIBBON AUTO BODY GLOSS cleans, renews and repolishes or revives the ORIGINAL FACTORY GLOSS.

Ask Your Jobbers or Dealers or Write Us.

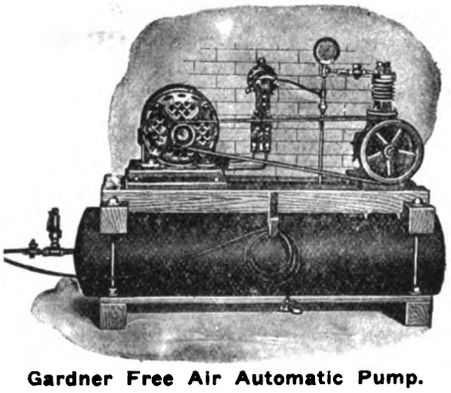
INTERNATIONAL METAL POLISH COMPANY, INDIANAPOLIS, IND.

Manufacturers of the Famous Blue Ribbon Polishes and Soaps.

GARDNER AUTOMATIC AIR PUMP.

It is decided economy and a good business move to have a complete air pumping equipment that is entirely automatic and assures of there always being an ample supply for motorists. Such equipment is a sure "trade getter," and one of the most popular on the market is the Gardner stationary free air unit illustrated herewith. Operation is by a Gardner 2x2½ air cooled, splash lubricated air pump belted to a one-half horsepower motor mounted on a sliding base, for the purpose of taking up any slack that may develop. The frame is securely bolted around the air tank and so constructed that it will not warp. Between the motor and the pump is a very reliable automatic controlling device to stop and start the motor automatically as the pressure rises and falls in the receiver. The device is set for 125 pounds as the maximum pressure and 105 pounds the minimum, unless a different rating is desired by the purchaser. With the pump comes as standard equipment, 15 feet of electric cord, 25 feet of the best grade of rubber air hose, attachment plug, three-inch pressure gauge, tire connection, safety valve, Perry quick opening air cock and a noiseless dash pot check valve, located between the compressor and tank to save the motor from starting under pressure.

Manufactured by the Gardner Governor Company, 126 Williamson street, Quincy, Ill. Write for price and catalogue AC-10, which describes the outfit in detail.



Gardner Free Air Automatic Pump.

NEW ACCESSORY CATALOGUE.

One of the most comprehensive books of reference on motor vehicle accessories published within recent years is the new Faw catalogue, which lists a very complete line of all standard motor car accessories. The book is thoroughly indexed on the back cover, this index serving as a ready reference to all the several important lines carried by the jobber and distributor. The catalogue is well laid out and printed and can be had upon request.

Distributed by J. H. Faw, Inc., 41 Warren street, New York City, and Atlanta, Ga.

U. S. M. T. INCREASES STOCK.

At the annual meeting of the stockholders of the United States Motor Truck Company of Cincinnati, O., an increase in the capitalization from $300,000 to $1,000,000 was authorized. The new issue will be divided into both preferred and common stock and the preferred class, which is cumulative seven per cent., will share in the earnings with the common up to 10 per cent. The stockholders subscribed for a large amount of the new stock at the meeting and the remainder will be offered to the public.

The United States Motor Truck Company was established seven years ago. It was reorganized and the capital stock increased to $300,000 in 1914 when R. C. Stewart was made president. Under Mr. Stewart's management the company has made remarkable strides in the truck industry to a position among the leaders, this increase in business being especially rapid during the past 18 months.

The report for the past year showed a large increase in sales and production and the increase in capital was made necessary by this enormous expansion in the concern's business, which became particularly marked during the past six months.

At the meeting of the directors the regular annual dividend of seven per cent. on the preferred stock was authorized and a considerable sum placed to the credit of the surplus.

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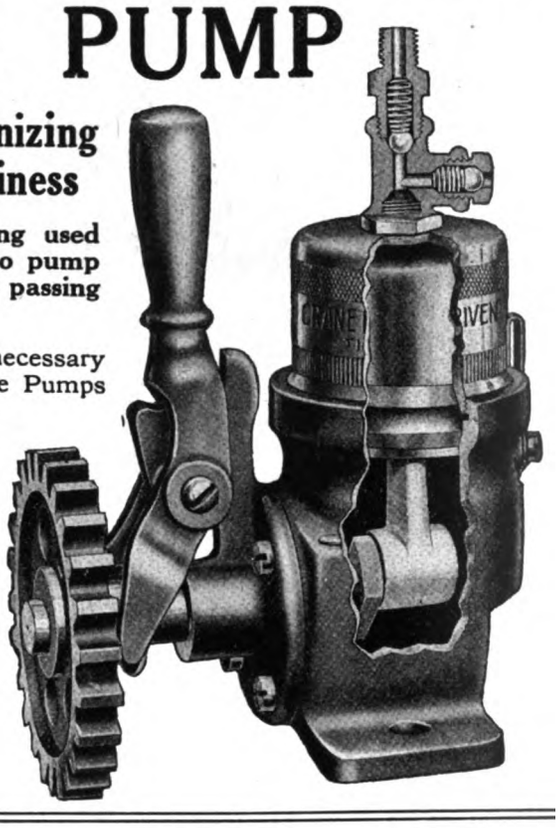
Crane PATENTED

ENGINE DRIVEN TIRE PUMP

$8. LIST PRICE

The Pump that is Revolutionizing the Power Tire Pump Business

With the special alloy packing ring used in Crane Tire Pumps it is impossible to pump any but pure air. No oil can pass this ring and nothing passing through the Crane Pump can harm the tires.



The Crane is sold equipped with hose and gauge and all necessary brackets. Any owner can install one in a short time. Crane Pumps will fit any make of car. No boring or drilling or machine work of any kind necessary. The satisfaction and service of a Crane Pump is worth many times its cost. It is made to give long and hard service and is sold under a broad guarantee covering material, workmanship and operation and to pump nothing but pure air.

JOBBERS AND DEALERS: Our selling policy will interest you; it is broad and liberal. Crane Pump dealers are getting the pump business and are earning quick big and easy profits.

LET US TELL YOU ABOUT IT TODAY

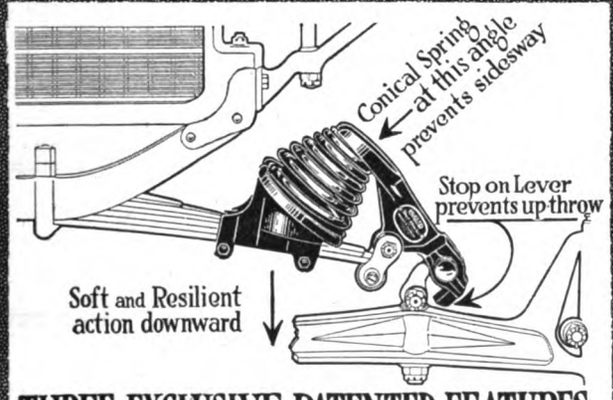
BAY STATE PUMP COMPANY

275 CONGRESS STREET BOSTON, MASS.

HASSLER

Shock Absorber

For FORD Cars



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"

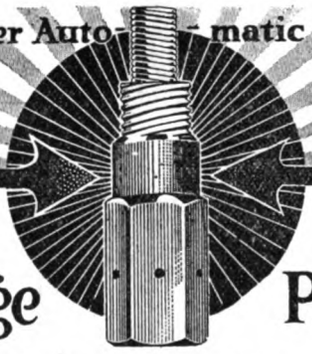
— 100,000 FORD OWNERS RECOMMEND IT —

WRITE FOR DEALERS TRIAL SET PROPOSITION

$15 for a Set of Four

Robert H. Hassler, Inc.
Indianapolis, Ind.

The Pioneer Auto-matic Gas Saver



More Mileage More Power

AEROFRAM

Gas Saver

The Simplest and Most Efficient of All Gas-Saving Devices—Effects a Notable Improvement in Engine Performance—Anybody Can Install It in Ten Minutes—For All Cars.

Absolutely Automatic—Nothing to Adjust

Dealers: The Aerofram actually does the work that more expensive gas-savers claim to do. When you offer it to your customer you do so with the certainty that he cannot duplicate its efficiency with any other device at ten times the price. It will positively add two to six miles per gallon—in many cases more. Hundreds of users have testified to this. Write for details. Liberal selling terms.

Price in Canada $1.50

$1 The Aerofram Co. $1

107 Massachusetts Avenue. Boston, Mass.

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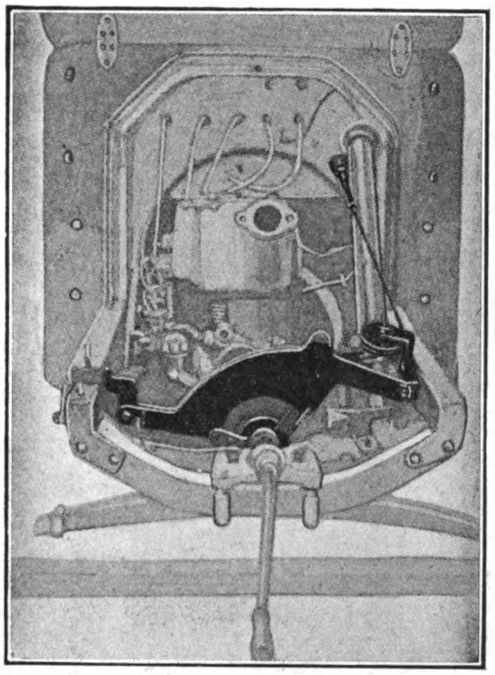
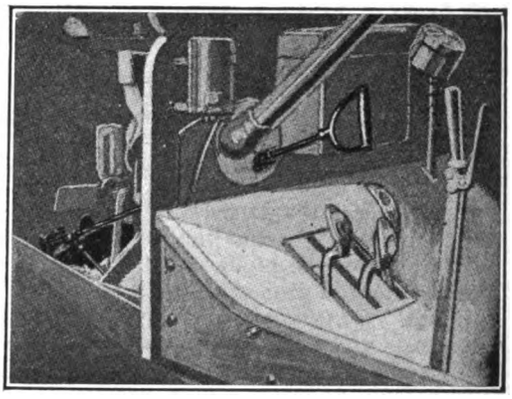


The Denver Starter For Ford Cars

Is Just the thing to put on your Ford and Metz autos.

Entirely concealed—guaranteed to turn your engine over—light, only weighs eight pounds—simple, any mechanic can put it on—positive in its action. Does not disfigure your car in any way — neither the crank or any other working part of your machine is interfered with—no ratchets—no cogs — no friction — automatically releases on back fire — no danger. This starter complete delivered, charges prepaid, anywhere in the United States, for only $7.50.



THE DENVER FORD STARTER CO.
327 Century Building, Denver, Colo.

Gentlemen:
Please find inclosed $7.50 for which please send me one of your starters for Ford or Metz Cars, charges to be prepaid by you, with full instructions for putting same on.

Name.....

Street Number.....

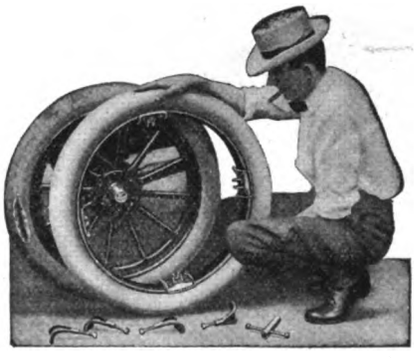
City or Town..... State.....

Durable! Efficient! Economical!
Try it! You'll Like It!

The Denver Ford Starter Co.

327 Century Bldg., Denver, Colo.

TWIN-RIM



Patented Feb., 1916

A DEMOUNTABLE RIM FOR

FORD CARS

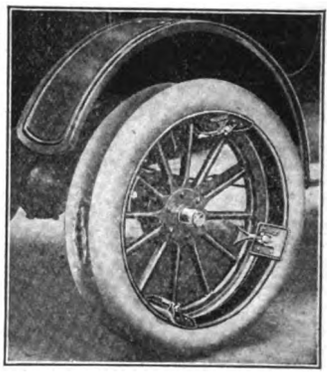
And All Other 30"x3½" or 30"x3" Clincher Rims

Thousands of Ford Car owners have equipped their cars with this invention and the universal verdict is: "They would not be without the TWIN-RIM."

YOU DON'T HAVE TO REMOVE DAMAGED TIRES

TWIN-RIM $5.00

DEALERS AND AGENTS WANTED



METHOD OF MOUNTING

MOUNTED READY TO RUN

TWIN RIM CO., Inc., - - - - - - 103 Massachusetts Avenue, Boston, Mass.

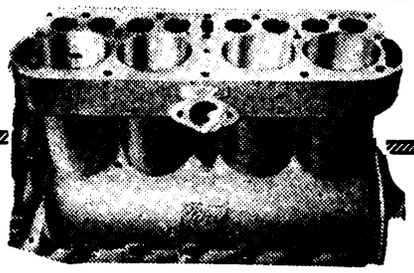
Automobile Mailing Lists 1916

28,108	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
8,123	Ford Dealers, price $17.50, or $3 per M by states.
285	Ford Dealers, Canada, $1.50.
28,463	Auto Garages, price $40, or $2.50 per M by states
29,306	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
45,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
940	Auto Supply Jobbers, price $4 for the list.
4,093	Auto Tire Dealers, price $3 per M.
2,404,150	Auto Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.
643,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

Write for particulars of any list you want.

A. F. WILLIAMS, Manager,

Phone Franklin 1182. 164 West Adams St., CHICAGO



CYLINDER BORING

AUTO, MOTORCYCLE, STATIONARY AND TRACTOR ENGINE CYLINDERS REBORED

Write for prices *Special offer to dealers*

Motorcycle Accessories Company

ST. PAUL, MINN.

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BRUNNER AIR COMPRESSORS

A BRUNNER AIR COMPRESSOR IN YOUR GARAGE AND A BRUNNER AIR SIGN ON YOUR GARAGE WILL BRING "BRUNNER WISE" MOTORISTS TO YOUR DOOR

The "Brunner wise motorist" is a fact—we created the "Brunner wise motorist" for you, Mr. Garageman by systematically distributing among the Brunner equipped garages for three years the three-color enamelled iron Brunner Air Sign, educating the motorists to know that Brunner Service meant efficient, high class service and that is why the "Brunner wise motorist" is patronizing the garages that display the Brunner Sign.

The Brunner Sign is another Brunner Idea, it has proven its wonderful advertising value to the garageman. The Brunner Sign, like all other successful innovations, will be imitated, but—remember the Brunner Sign is backed up with THREE YEARS practical demonstration and is a proven success, it has a three years' start—watch the progress of the Brunner Sign and the growth of the standing army of "Brunner wise motorists"—**get in on the ground floor, we are going to bring business to the door under the Brunner Sign.**

The Brunner Air Compressor Has Been Consistently Demonstrating Its Sterling Value to the Garageman *in the Garage* Ever Since the Garage Business Has Been a Business.

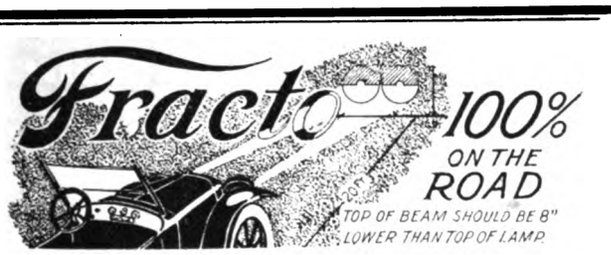
The Brunner Line was designed and built for the garageman's special requirements, it has developed with the garage business, it has always been honestly built and honestly advertised, it has always been sold on a bonafide guarantee that we have always stood squarely back of, and is a good sound business proposition worthy of the garageman's explicit confidence. No freakish construction, no reckless advertising claims, no cut price inducements, everlasting guarantees or unlimited free trial offers, but—simply the good sound business proposition that it has always been.

WRITE FOR CATALOGUE AND HANDBOOK ON COMPRESSED AIR AND THE NAME OF THE BRUNNER JOBBER COVERING YOUR TOWN

BRUNNER MANUFACTURING COMPANY

Main Office and Plant, Dept. A.
UTICA, N. Y.

Cincinnati Branch,
419 First National Bank Bldg., Cincinnati, Ohio



The Best Selling Accessory of the Year. Car Owners Buy at Sight. That Means Profit For You, Mr. Dealer.

FRACTO is a glass shield that is fitted under the lamp of a head light. It weighs two ounces. It is a scientific means for correcting the projection of light rays by directing them upon the reflector, so they will illumine the highway as required by law, and will not dazzle those within their range.

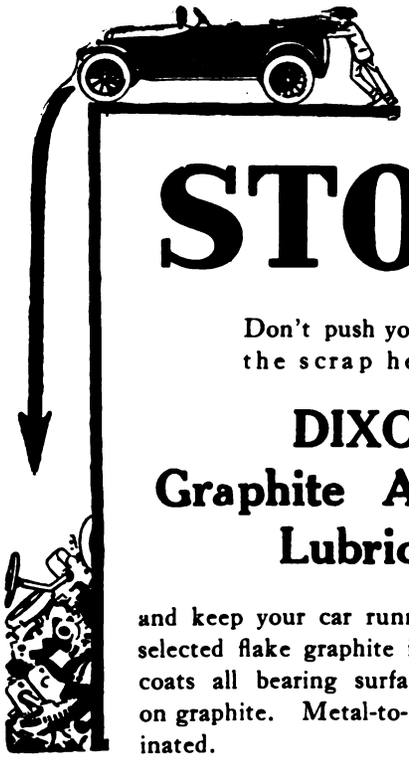
No light is lost, the efficiency of the lamps for night driving is not lessened, and the requirements of motor laws are fully complied with.

THE LIST PRICE IS $2.75 THE PAIR

There is a liberal discount to dealers. Write for agency proposition.

FRACTO SPECIALTY CO.

256 Newbury Street, Boston, Mass.



STOP!!

Don't push your car onto the scrap heap. Use

DIXON'S Graphite Automobile Lubricants

and keep your car running like new. The selected flake graphite in the grease or oil coats all bearing surfaces. Graphite rides on graphite. Metal-to-metal contact is eliminated.

Ask for booklet No. 49-G

Joseph Dixon Crucible Company

Established 1827

Jersey City, N. J.

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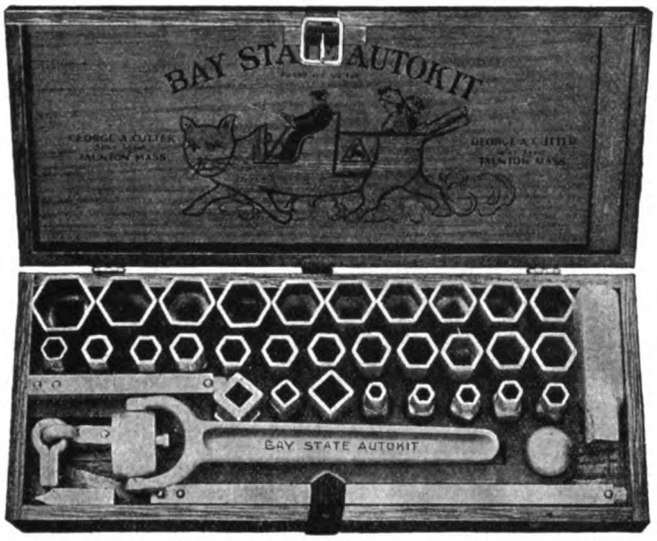
BAY STATE AUTOKIT

WHAT ARE YOU GOING TO DO?



Better and quicker work is now demanded from auto repairers. Labor is more costly and less hours are worked. Yet a more satisfactory job must be done and at the present scale of prices.

To offset loss in earnings, high shop efficiency and the best of machine and tool equipment is necessary Time saved means labor gained, a clear profit that all repairers must now secure.

With a BAY STATE AUTOKIT, makeshift tools are unnecessary. There is just the right wrench for every job. It can be selected instantly and with this set any nut, bolt or cap screw on any pleasure car or truck can be fitted and reached from any angle.

All BAY STATE AUTOKIT WRENCHES are made and sold on honor. Fully guaranteed and will last for years in the hardest service.

JOBBERS AND DEALERS—These are the most used and fastest selling wrench sets in the market. There is a complete set for the repairer and an outfit just suited for the needs of anycar or truck owner. Write for discount sheets and catalogue.

Set No. 1, 31 Sockets	$10 00
Set No. 2, 12 Sockets	7.50
Set No. 3, 11 Sockets (For Ford Cars)	4.00

GEORGE A. CUTTER

TAUNTON, Sales Agent MASS.

KORINE

CARBON REMOVER

CLEANS MOTOR IN ONE HOUR

GUARANTEED NON-INJURIOUS
FOUR YEARS OF SUCCESS

THE SAFE—CLEAN—QUICK WAY

GARAGES:—Why buy a costly burning outfit? Korine cleans out Carbon without DANGER of FIRE or marring finish; only tools needed, one Oil Gun.

One Gallon cleans eight Four-cylinder Motors, five Sixes, four Eights, or two Twelves. ONE HOUR does it. No acid, grit or chemicals.

DEALERS

Quart and Half Gallon sizes big sellers to owners for home and road use. On the market for four years. Used all over the United States.

Concentrate on a Remover that you can stand back of. Korine positively guaranteed to do as claimed. Write us for discounts.

Quart $1.00, Half Gallon $1.75, Gallon $3.00.

NOT A GAMBLE, A SURE THING WITH AN ESTABLISHED REPUTATION

KORINE CARBON REMOVER CO.

136 Federal Street Room 317 Boston, Mass.

SHALER Tire Repair Outfits

Improved Wrapped Tread Method Used by Big Tire Manufacturers

Does better work than the big, high-priced vulcanizing outfits costing 3 to 5 times as much, and does it at lower cost. A boy can use it. It's the only vulcanizer that has Automatic Heat Control, and, therefore, can't undercure or overcure a tire. No watching or regulating. Steam or electric heat.

Write for Catalog

Send at once for the new Shaler catalog, the most complete Vulcanizer Catalog ever published, and ask for the low discount price of the Shaler Tire Repair Outfit. We will also send repairmen our book, "Common Sense About Tire Repairs," on request.

C. A. Shaler & Co., 263 Fourth St., Waupun, Wis.
The Largest Manufacturers of Vulcanizers in the World

McCORMICK ALLMAND WEATHERSTRIP

"Stops that Leak thru the Windshield"

Closes space between panes, making it absolutely RAIN, DUST and WIND-PROOF.

Adjustable to any thickness of glass. Easily removed or replaced. Does not obstruct vision. Less than half inch wide.

$1.00

Write for dealers' proposition

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501 Lincoln Bldg. Louisville, Ky.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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We want to send you our Tool Book with our compliments. With this book before you, you are in the same position as if you were able to go through a big wholesale tool house and select from the immense stocks. This book enables you to buy

Tools at Wholesale Prices

You will recognize many of the well-known brands in the big selection offered. You will find the name "Lakeside" on many, *our own brand*, and it stands for the *highest quality*. The Tool Book will post you on tool prices. Every tool carries our well-known guarantee of absolute satisfaction.

Send for the Tool Book Today

Montgomery Ward & Co.

Dept. A H 539

New York Chicago Kansas City
Fort Worth, Tex. Portland, Ore.
Write House Nearest You.

Stillson Wrench 18 in. $1.10

BETTER, CHEAPER THAN PLATINUM

Stock No. 1 Size No. 9 Ga. wire 10/64" deep $1.00
Stock No. 2 Size No. 12 Ga. wire 7/64" deep $0.75
Stock No. 3 Size No. 9 Ga. wire 3/64" deep $0.75

NEW ERA
INDESTRUCTIBLE
Sparking Points

For all Coils, Magnetos and Vibrators

Price only $1.00 and 75c (according to size) and Guaranteed for Life

Many Testimonials Like This

Elkart, Ind., Dec. 19.

Gentlemen:—Your favor of the 7th inst. has been received. We have used four of your sparking points on two different machines, both running over five thousand miles and so far they seem to be as good as the platinum points. One of these magnetos was on a shaft which made it run about 35 miles per hour, and the other on another shaft which made it run at the rate of about 15 miles per hour.

Yours very truly,
CHICAGO TELEPHONE SUPPLY CO., By A. J. RIGGS, Secretary.

We guarantee to replace without charge or question any New Era Sparking Point, no matter where purchased or what abuse same has been given.

Twice the Regular Discount to Dealers

NEW ERA SPRING & SPECIALTY COMPANY
877 Woodward Avenue **Detroit, Michigan**

Will Pay For Itself In A Few Days

THE SUPERIOR VULCANIZER

Needs no experience to operate.

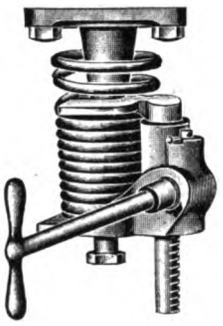
Repairs casings and tubes perfectly.

Inexpensive for car owners and garages.

Hundreds of satisfied users.

Write for description and prices.

LEE C. MAPES, C-16 Fulton Ave., Rochester, N. Y.



Bryant Valve Spring Remover

is designed to accomplish easily the removal of valve springs in all motors.

Operated with key (as shown above), it can be used on motors where the valve springs are hard to get at. THE BRYANT TOOL handles the springs quickly and surely, does not slip—and

It holds the spring compressed, and makes it easy to get it back into position again.

LIST PRICE $1.50

From your jobber, or from

STEVENS & CO.
375 Broadway, New York City

Wayne

CURB PUMPS

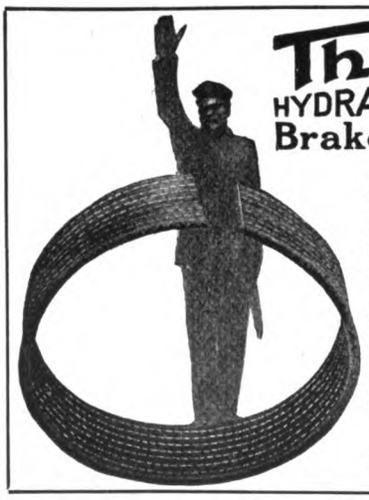
Have won the popular favor of posted motorists

BECAUSE

They appreciate pure, clean gas, quick service and the exclusive Wayne Clock-Dial Register that shows exactly how much gas they are getting.

Send for our circulars and easy-terms proposition.

WAYNE OIL TANK & PUMP CO.
2 Canal Street **Ft. Wayne, Indiana**
Canadian Office: 1 Wabash Avenue, Toronto, Ontario



Thermoid
HYDRAULIC COMPRESSED
Brake Lining - 100%

Is the all-friction brake lining—friction right through from surface to surface, safe until worn as thin as paper.

Thermoid is made of the best quality, long-fibre Canadian Asbestos spun on brass wire and impregnated with special friction compound which also protects it from the action of gasoline and water. It is folded and stitched and then hydraulically compressed into one single solid substance. Size for size Thermoid is the heaviest brake lining on the market—has more body to it—better wearing quality.

And Thermoid is nationally advertised—don't fail to cash in on this advertising.

THERMOID RUBBER COMPANY
TRENTON, N. J.
Makers of Nassau Tires and Thermoid Garden Hose.

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WILMO
Gas Saving Manifolds

The WILMO vaporizes all the remaining gas particles right at the valve openings, therefore makes your car run smooth at all speeds.

SOLD BY ALL DEALERS

Gillette Motors Company

KING C. GILLETTE, President

MISHAWAKA, - - - - INDIANA

Successors to Wilmo & Amplex Co.

Used Electric Drills

Our Guarantee

Have a record of saving more time in proportion to the amount invested than any other piece of machinery.

We guarantee all machines sold by us to give perfect satisfaction or we refund your money.

Write for Prices, Giving the Capacity and Kind of Current Available

St. Louis Portable Tool Co.

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Add to Garage Profits by Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profits

PREST-O-LITE

Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for $60.00. (Canada $75). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.

The Prest-O-Lite Co., Inc.
The world's Largest Makers of Dissolved Acetylene.
309 Speedway, Indianapolis, Ind. Canadian Office and Factory, Merritton, Ontario

THE
ACME

Ford Steering Controller

PRICE COMPLETE, $3.50

The ACME STEERING CONTROLLER is a simple and substantial Accessory, of practical value to all Ford Car Owners.

By the pressure of two coil springs acting upon the tie rod, the car automatically tends to a straight course, regardless of holes and obstructions, thereby relieving the strain of driving.

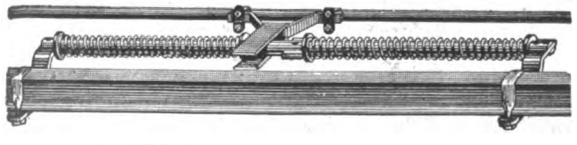
The ACME STEERING CONTROLLER is the only practical steering device for Ford Cars on the market. As proof of this not 1% of those sold to date have been returned. However, the Manufacturers stand ready to take back and make refund to the dealer for any machine returned.

It is easily seen from the description what the device will do, and the Ford Car Owner readily buys because of its simplicity and apparent effectiveness.

Have the device in stock and be in line for sales.

Be the first dealer to introduce the ACME STEERING DEVICE in your territory, and gain this advertising advantage.

Write to your jobber or to us for the discount to dealers.



ACME STEERING DEVICE CO., Mfrs., 1223 Filbert St. Philadelphia, Pa.

FEDERAL
Double-Cable-Base
TIRES

FOR

"Extra Service"

FEDERAL RUBBER MFG. CO.
MILWAUKEE, WIS.

The Manley Garage and Machine Shop Equipment

Designed and built to give economical, dependable service. Time and labor saving equipment that permits automobile repairer to do any size job right and quickly.

Air Compressors ***Portable Cranes***
Arbor Presses ***Screw Presses***

Our complete line is fully described, illustrated and priced in our catalogue. Every jobber, dealer, garage and repair shop man should have a copy. Free at request.

UNITED ENGINE AND MFG. CO.
HANOVER, PA.

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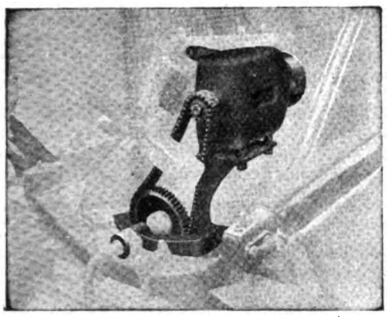
ELECTRIC
ISCO
SYSTEM



Electric Starting and Lighting Systems for FORDS $75

IT SPINS THE MOTOR

There is ALWAYS a start in the Disco, no matter how cold the day. It doesn't merely turn the motor, it SPINS it.

The Disco is a single unit system, simple, light and compact. It operates with a 12-volt current, insuring a start every time. Its patent yoke bracket maintains perfect alignment and eliminates chain breakage. It is easily accessible, and does not interfere with the accessibility of the Ford engine.

Eighteen American cars are using the Disco as regular equipment. We have a proposition to make to owners, dealers, jobbers and manufacturers. Early requests for territory will be given preference.

Write or Wire Today

Disco Electric Starter Corporation
DETROIT, U. S. A.

Harvey RACINE

Boltless Auto Springs Are Guaranteed

Against All Defects

Our broad guarantee not only covers center breakage but the entire spring—through and through and from end to end. If it is defective *at any point* we will replace it.

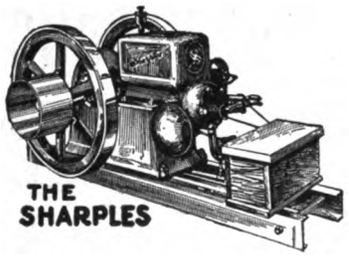
There's a Harvey Boltless Auto Spring for every make and model of car. Over 10,000 springs carried in stock at factory for quick shipment. Harvey Springs are also carried in stock at nearly half a hundred jobbing centers. Write us for name of your nearest jobber.

FREE. The Harvey Spring Book for 1916 is now ready for distribution. It is the most complete spring book ever issued and will be of great assistance to every Dealer, Garageman and Repairman. MAILED FREE.

THE HARVEY SPRING CO.
851 17th Street Racine, Wisconsin

2-Sparks—Quick Starting

You'll find our Double-Ignition engine **very** easy to start. It has two complete, separate sparking systems, like the best foreign automobiles. **Either** spark will run the engine. **Both** sparks can be used for starting. This makes the engine practically trouble-proof. Magneto is not affected by water—will run in the pouring rain without missing.



SHARPLES DOUBLE-IGNITION

Gasoline Engine is solidly built for heavy duty. Mounted on non-decaying steel skids. Gasoline tank in lowest part. Gasoline can never drain out. It's drawn up by **suction-feed.** Endorsed by fire underwriters. Hopper cooled. Speed can be instantly changed by shifting lever. Double inspected and **guaranteed forever.** Four sizes 2½ to 9 H. P.

Our contract offers big opportunities for the live dealer. — WRITE US.

The Sharples Separator Company
Also Sharples Milkers and Sharples Separators
WEST CHESTER, PA.

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LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

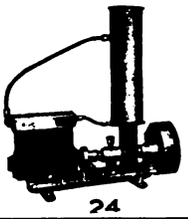
FREE AIR SERVICE CURB STANDS

Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. *Save Money.*

LIPMAN AIR APPLIANCE CO.
199 Pleasant St., BELOIT, WIS.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MOSCO

Mosco Valve Grinder

List Price $1.50

A positive, accurate, quick and easily operated valve grinder. A perfect machine, as easily operated as any hand tool. Anyone can use it and do the highest grade work, and obtain a superior finish on valve seats.

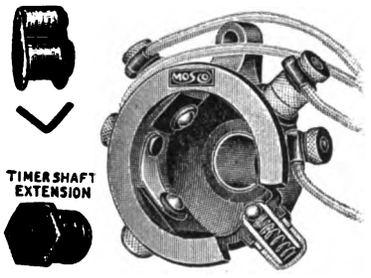
To operate, the handle is pulled, which rotates the tool and valve; a spring on chain pulley pulls in the opposite direction, which reverses the rotation of the valve.

It easily fits in the tool box. For repairers it is a time and labor saving tool. When ordering state make, model and year of car or motor.

BEMUS BALL CONTACT TIMER

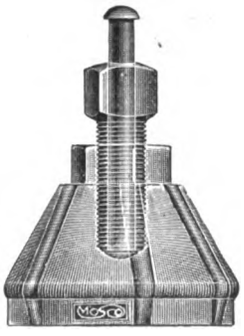
FORD CAR TYPE

List Price $2.50



The remarkable service giving qualities of the 1915 Bemus Timers have even been further improved in the 1916 model. With top wire connections, offset balls, extra long non-wearing roller and reinforced arm. This makes the present model the perfect timer and an attachment that the jobber and dealer can sell with entire satisfaction to all buyers.

MOSCO WHEEL PULLER



A loose plunger wheel puller, for Ford, Overland, Buick, Maxwell, Saxon and Chevrolet cars. A powerful one-man tool with long service life and one that will save time and labor.

It sells at a price with discounts that will interest all the trade.

WRITE FOR THE LATEST MOSCO CATALOG AND TRADE DISCOUNT SHEETS.

Motor Specialties Co.

WALTHAM MASSACHUSETTS

Stock an Assortment of

VULCAN QUALITY

SPRINGS

for the popular cars in your territory. You'll find it one of the most profitable lines you ever handled. Broken springs must be replaced; the dealer with the right spring in stock gets the business.

Vulcan Quality insures a steady demand, satisfied customers, and a liberal margin of profit. Vulcan Service insures instant shipment of any spring you need. Hundreds of dealers are enthusiastic about their Vulcan Spring sales. Let us show you how the Vulcan will increase your business.

Don't fail to write today for dealers' proposition and discounts

Address our nearest branch

VULCAN QUALITY
JENKINS VULCAN SPRING CO.
St Louis, Missouri 1402 Chestnut St
Fort Worth Texas 708 Commerce St
Sumter, S.C. 29 Caldwell St

This display rack free with assortment of 25 springs. Smaller rack free with 12 springs.

Power Producers

TRUMP PISTON RINGS

Most Sizes

$1

Per Complete Ring

The three section scientifically designed and made "TRUMP" forms a perfect unit and is guaranteed to give satisfaction under every condition. Especially good for restoring compression to old, worn cylinders. There is a ring for every engine

Jobbers and dealers send for catalogue and discounts.

TRUMP MANUFACTURING COMPANY

6 Union Street **Crown Point, Indiana**

J. H. WASSERMAN, Gen. Eastern Representative, 149 Church St., New York, N. Y.

SUBSCRIBE TO

The Accessory and Garage Journal

TIMES BUILDING, PAWTUCKET, R. I.

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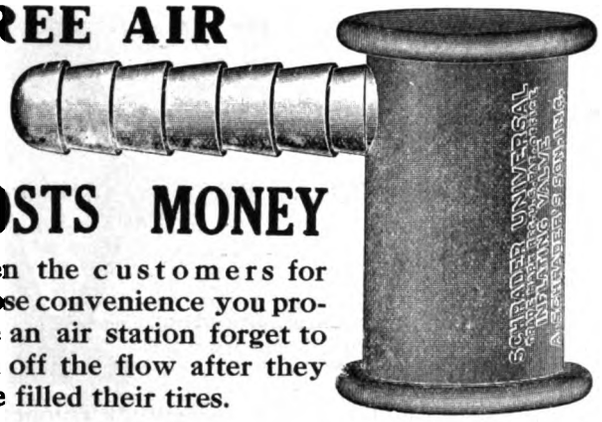
FREE AIR



COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Automatic Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from 1-4 in. to 5-8 in.

PRICE ONE DOLLAR

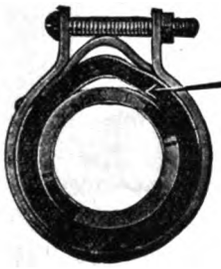
Manufactured by

A. SCHRADER'S SON, Inc.

800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

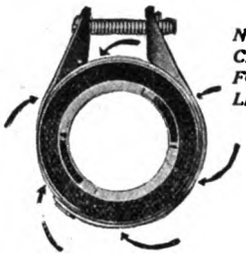
THE OLD WAY



Note: Escape of Air, Water, Steam, Etc.

THE IDEAL HOSE CLAMP

THE NEW WAY



NO CHANCE FOR LEAKAGE

The Only Clamp That Closes Perfectly Round Over a Hose

A FEW SUPERIOR POINTS OF THE IDEAL CLAMPS ARE:—

They will not *Buckle* or cut the hose.

They can be slipped over a pipe, no matter in what position the pipe may be.

They will always form back to the original shape by simply tightening the screw.

SAMPLES AND DISCOUNTS

Manufactured by

IDEAL CLAMP MFG. CO.

202 Bradford St., Brooklyn.

Distributed to the Trade by

J. H. FAW, Inc.

41 Warren St., New York City. Branch: Atlanta, Ga.

Kimbrough's Never Leak,

Is a liquid which when injected into your automobile or bicycle tire, will heal punctures automatically and instantaneously. This is not a filler. Guaranteed not to injure rubber, will add to the life of your tire—does not interfere with air cushion—occupies 5 per cent of the air space—does not gum or solidify—removes cause of 75 per cent. of blowouts.

Is not sticky—will not freeze—does not hinder vulcanizing—lasts indefinitely—costs but little—one gallon can is sufficient for ordinary car.

This is put in the inner tube—does not interfere with putting in air. This will save your money—save your time—save your temper and make your pleasure trips enjoyable.

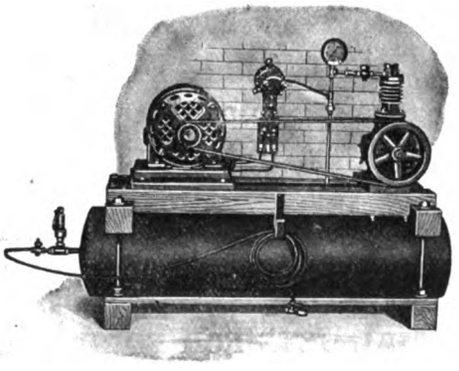
Shipped anywhere in the United States charges prepaid, upon receipt of $5.00 per gallon can.

THE DENVER FORD STARTER COMPANY

Suite 327 Century Bldg. Denver, Colo.

GARDNER

STATIONARY FREE AIR UNIT



FOR

SERVICE ECONOMY DEPENDABILITY

A Gardner Outfit of this type installed in *your* garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY

126 Williamson St., Quincy, Ill.

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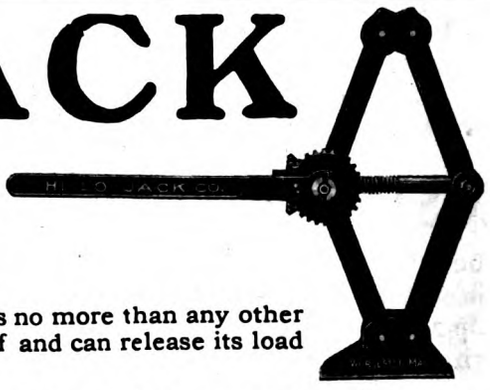
HI-LO JACK



A wonder in design, simplicity, capacity and utility. No other jack operates so easily or lifts so great a load. It starts lifting at 5" and increases its power at 7" at the rate of 2000 pounds to every inch of its range of lift. It will raise its load to 17" or 19". The higher the lift the easier becomes the operation.

There is a size for every pleasure car and Truck. It weighs no more than any other jack and occupies no more space in the tool box. It is fool proof and can release its load only at the will of the operator.

It will go under any axle made, and will raise cars and trucks when loaded to capacity. To operate requires only a small part of the effort required with other jacks. It is extremely simple in operation and can be easily used by any one.

HI-LOW JACKS are scientifically constructed upon the best mechanical principles, of the best material and are fully guaranteed. The secret of its power is in the embodiment of the toggle joint principle, the simplest known method of applying power.

On the road or in the garage or repair shop it has the same value, and the cost is extremely small in comparison with its great utility.

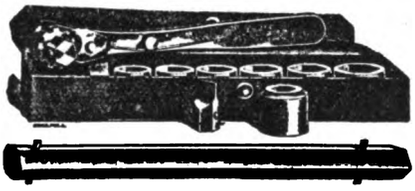
JOBBERS AND DEALERS—This jack has the quality and efficiency you have been seeking. A better jack—something distinctive—which has selling features that must appeal to all car owners.

Shows Jack Folded to 5 Inches.

Send today for detailed information and special trade discounts.

HI-LO JACK CO.

141 Green St., Worcester, Mass.



DON'T USE A COLD CHISEL

USE THE LANE UNIQUE RATCHET WRENCH

FOR CLOSE AND DIFFICULT WORK

IT TURNS NUTS VERY CLOSE TO THE WALL.

is easily and quickly reversed, sockets will not break or split and fits three standards and automobile nuts.

MADE FOR HEAVY SERVICE

Wrench is machine made. Sockets are turned from steel bars, cold broached and case hardened. Fully warranted. Every repairman should have a UNIQUE RATCHET WRENCH SET.

SPECIAL SETS FOR FORD CARS

Dealers, Jobbers and Garagemen, Write for Trade Discounts.

STANDARD SET Contains:
1 Handle 7 inches in length.
2 Screw driver bits.
7 Sockets to fit semi-finished hex. nuts as follows:
U. S. Standards from 1-4 in. to 1-2 in.
A. L. A. M. Standards from 5-16 in. to 11-16 in.
Cap screw heads from 5-16 in. to 5-8 in.
Price in leather case $2.50.

THE FORD SET Contains:
1 Handle 7 inches in length.
2 Screw-driver bits.
1 Extension bar 7 in. in length.
SIX SOCKETS to fit all nuts and bolt heads on Ford car, including the cylinder head.
Price in leather case $3.00.
Sold by dealers everywhere.

WILL B. LANE, Manufacturer, 180 N. Dearborn Street, Chicago, Ill.

You can make anywhere from $1500 to $3000 a year above expenses. Your investment to start is small, returns are quick and income cash. Profits are large on every job. The Tire repair business is growing every year. Every city and town offers opportunity for you. Buy only an

AKRON-WILLIAMS TIRE REPAIR EQUIPMENT

The better your equipment, the better your work and the greater your volume of business. Start right. Use equipment which is

Endorsed by 30 Leading Tire Manufacturers We are making an unusual offer to everybody who buys our equipment. You can become a tire repair expert by our plan.

SEND FOR OUR 30 DAY SCHOOL PLAN

You start right. No experimenting. No failures. You become a practical, first-class repair man.

SEND FOR CATALOG NO. 12

WILLIAMS FOUNDRY & MACHINE COMPANY
ASH STREET, AKRON, OHIO

WATERHOUSE & LESTER CO.
Exclusive California Distributors, San Francisco and Los Angeles

The Automobile Journal

A magazine that is read by more than 20,000 car owners every issue.

It Will Interest You—

Send for sample copy. Times Bldg., Pawt., R. I.

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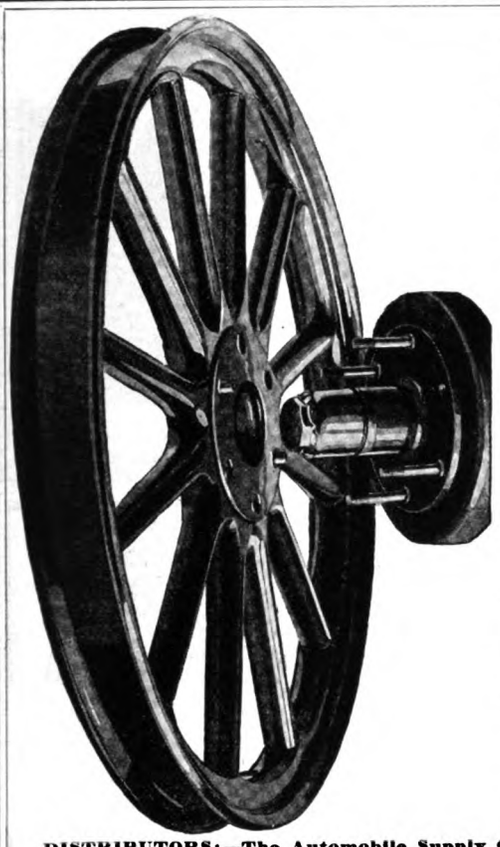

Make Ford Wheels Demountable

Change the wheel instead of the tire. Carry a spare wheel with a tire already mounted. The change can be made in two minutes.

Standard Demountable Wheel Set

Equips the regular Ford car wheels so they are demountable and interchangeable, and gives one spare wheel on which an extra tire is carried inflated. It consists of four special steel plates that are attached to the insides of the wheels on the car and the necessary special bolts, and extra wheel complete. No machine work whatever and no tools needed but a wrench to install the plates. The change can be made in an hour.

The driver makes the tire change by jacking the car, loosening four bolts, removing the wheel, putting on the spare wheel, tightening the nuts and strapping on the wheel removed. Contrast this with the change of any demountable rim.

LIST PRICE $12

JOBBERS AND DEALERS

Write or wire for special proposition. This is the newest and fastest selling Ford car equipment in the market. It will be a leading line, sells the year through, and will bring big profits.

STANDARD AUTO ACCESSORY CO.
Leipsic Ohio

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One of the few staple and practical trucks on the market.

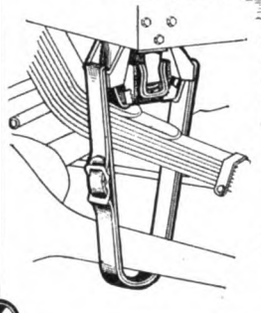
Our selling policy and proposition is the most liberal ever offered to the trade.

One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
Rochester, New York

YANKEE
SHOCK ABSORBER
BEST IN THE WORLD



No. 20 FOR FORD CARS

The one practical shock absorber and Recoil Check. The principle is that of a steel wedge working between leaf springs.

NO BUMPS. NO SHOCKS.
Adjustable to all loads. Easy to attach. A wrench is the only tool necessary.

Set of Four $14
Write for special trade discount

SIMPLEX AUTO SPECIALTY CO.
731 Woodward Ave., Detroit, Mich.

Yankee Shock Absorber No. 20 for Large Cars, Set of Four $20

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An authoritative work on upkeep, care and repair of electric storage batteries—

"Starting and Lighting Batteries"
NOW READY

Every repair, garage and service station man needs it.

Send today---$1.00 for Your Copy

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BOULEVARD ROADSTER

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Four-Cylinder Motor,
3 1-8 x 4 1-2, en bloc
Cantilever Springs
110" Wheelbase
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Roller Bearings
SERVICE BRANCHES
ATLANTA-DETROIT-BOSTON-SAN FRANCISCO-NEW YORK-LOS ANGELES-CHICAGO-MINNEAPOLIS-LONDON, ENG.

DEALERS—This Talk is Just for You

Send for a sample order. We make one price to all—the lowest.

Circulars and discount sheets on request.

You can save dollars and add to your prosperity by selling the Martin line of tire covers, water buckets, inner tube cases and similar goods.

These are made of heavy imitation leather. (Not of cheap oil cloth). They are the kind and quality that will please and satisfy the customer.

These values, for the price, are phenomenal.

For instance we make a price to you of 85 cents for our style D 34 by 4 tire cover for special hangers and wire wheels.

Our price to you for inner tube cases for single tubes is $8 per 100. They are of good quality water proof materials.

Prices and quality are what interest you. They show the live dealer where to buy to earn the big and easy profits.

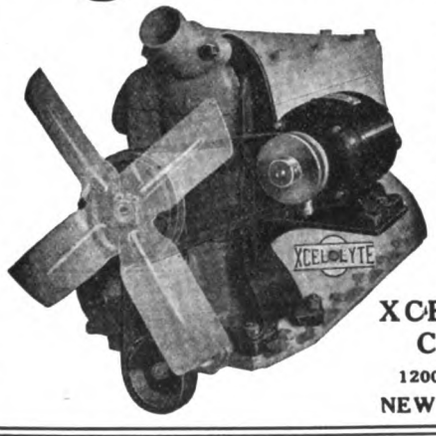
We will quote you prices as low as those mentioned on our complete line. If you buy from us it will make 1916 a prosperous year for you.

Orders are not accepted from owners. These prices are exclusively for the trade.

THE MARTIN MFG. CO., Lancaster, Ohio

XCELOLYTE

LIGHTING SYSTEMS FORD, OVERLAND



An Exclusive Territory Proposition Open to Dealers.

Ball bearing dynamo. 6-80 storage battery, double-bulb headlamps, tail lamps, dash lamps, automatic cut-out, switch, bracket, driving transmission included in this high grade equipment.

Write for Agency Terms.

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BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
THE HESS-BRIGHT MANUFACTURING COMPANY
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Here's What You Need in Your Garage or Repair Shop

because it is an all around machine and has features that make it a necessary tool for your line of work.

The "Whitney" Hand Miller

will cut gears, cams, sprockets, do key seating, profiling, slotting, slabbing, straddle milling, and hundreds of other operations.

Our Universal Milling Attachment permits the use of end mills and makes the machine desirable for drilling and all classes of milling, where small cutters and high speeds are necessary.

Simply Drop a Postal for Catalog No. 3.

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"NORMA"

"NORMA" BALL BEARINGS

(PATENTED)

The almost universal use of "NORMA" Bearings in ignition apparatus, lighting generators and starting motors having a nation-wide reputation for dependable service, inevitably suggests that "NORMA" Bearings are an important factor in maintaining that service.

Why Experiment?

Be "NORMA" - Wise

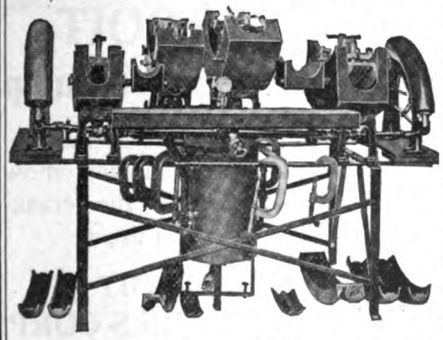
NEW DEPARTURE BALL BEARINGS

American Made FOR American Trade

QUALITY FIRST

THE NEW DEPARTURE MANUFACTURING CO. CONRAD PATENTS LICENSEES BRISTOL, CONN., U. S. A.

Big Money Double Treading



Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch inclusive.

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and 1044 S. Main Street, Los Angeles, Cal.

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1790 BROADWAY —— NEW YORK

BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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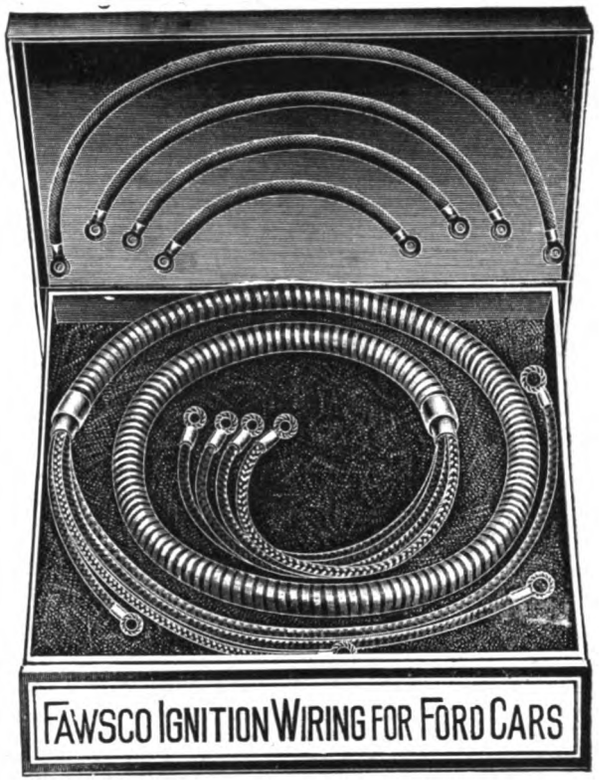
FAWSCO Ignition Wiring Assembly For Ford Cars



METAL ARMORED

This assembly is the best that quality material and careful workmanship can produce. Full Soldered Joints, Improved Ferrules on Tubing and Self Made Terminals.

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4 Wire Primary - -	Set $0.80
5 Wire Primary - -	Set 1.00
4 Secondary Wires - -	Set 0.40

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Branch, Atlanta, Ga.

Time Savers
For Charging Storage Batteries

HOOK them up with Universal Test Clips Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.
Made of steel—lead plated—may be used over and over again.
No. 13-A—¾" spread of jaws.
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Your money back without quibble if not entirely satisfied.
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Mabey's Electric Patching Tool for Vulcanizing cuts and holes in tires. Works on your lighting circuit. Price complete $2.75, F. O. B. Indianapolis.

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STANDARD
FOR CHEVROLET "490"

Built on the tried and true centrifugal system which does not alter. Hand steady as a rock at all speeds.

Handsome nickel flush mounting makes it an ornament to your car.

Guaranteed country-wide service assures your lasting satisfaction.

$15 *DEALERS write for proposition.*

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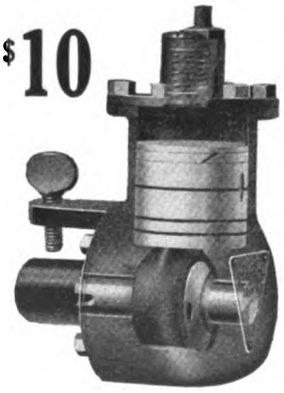

$10

YOU CAN SELL A
DETROIT Gearless Tire Pump

to 75 per cent. of the motorists to whom you show it. It goes on the crankshaft when you use it.

DETROIT ACCESSORIES CORP.
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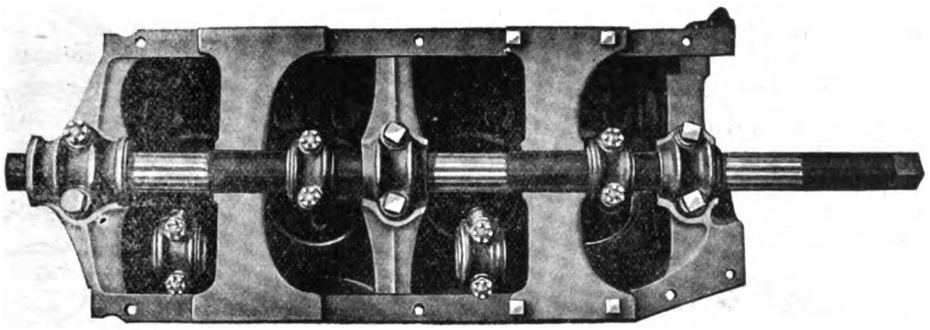
The *BEST* Tools Are None Too Good for the Particular Mechanic. Especially When That *BEST* Is Obtainable At Reasonable Prices.



FORD CONNECTING ROD AND MAIN BEARING REAMER
(Two Guides Supplied With Each Tool.)

If perfect alignment means anything to you then you want this tool.

No Scraping
No Guesswork
A Fussy Job Made Easy.

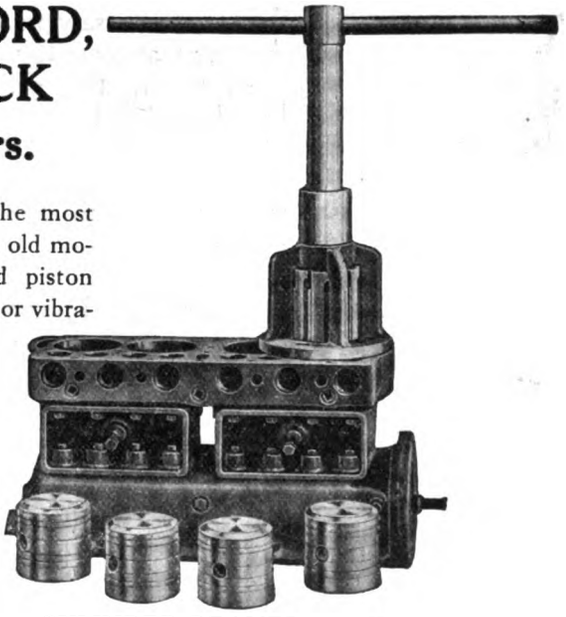
Increase the profit by reducing the time required.

PISTONS
FOR THE
FORD and
OTHER MAKES

For reboring FORD, METZ,—BUICK M 10 cylinders.

A properly fitted piston is the most important repair to be given an old motor; it stops all knocking and piston play; eliminates the most of motor vibration thus prolonging the life of the car and adding to the comfort of passengers.

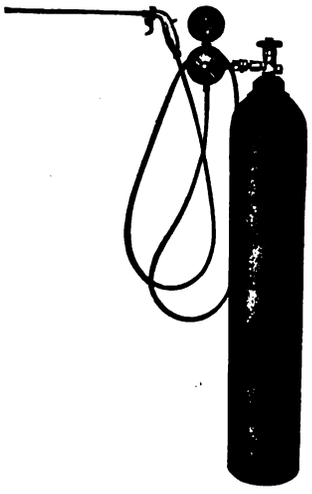
More power is given to the motor; all fouling of spark plugs and carbonizing is stopped; considerable savings in oil and gasoline is effected, all score marks taken out and cylinder finished as smooth as a gun bore.



CYLINDER REAMER and JIG

WELDING

CARBON REMOVING



Style A Carbon Removing Outfit

PREPAREDNESS—EFFICIENCY

When equipped with a **DYER** welding, carbon removing, steel cutting, lead burning or brazing outfit, you are prepared for straightening that frame, crankshaft or axle, welding broken parts, building up worn parts, tightening loose rivets, soldering or burning carbon from cylinders in a most efficient and economical manner.

We Carry a Large Stock. Get Our Prices.

Catalogue on application.

THE G. H. DYER CO., Cambridge, Mass.

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"Name your car—*I'll* light it"

OUR little booklet lists the proper lamps for all 1916, 1915 and 1914 electrically-lighted cars. With it your clerk can't make a mistake, particularly when he has at hand the

EDISON MAZDA

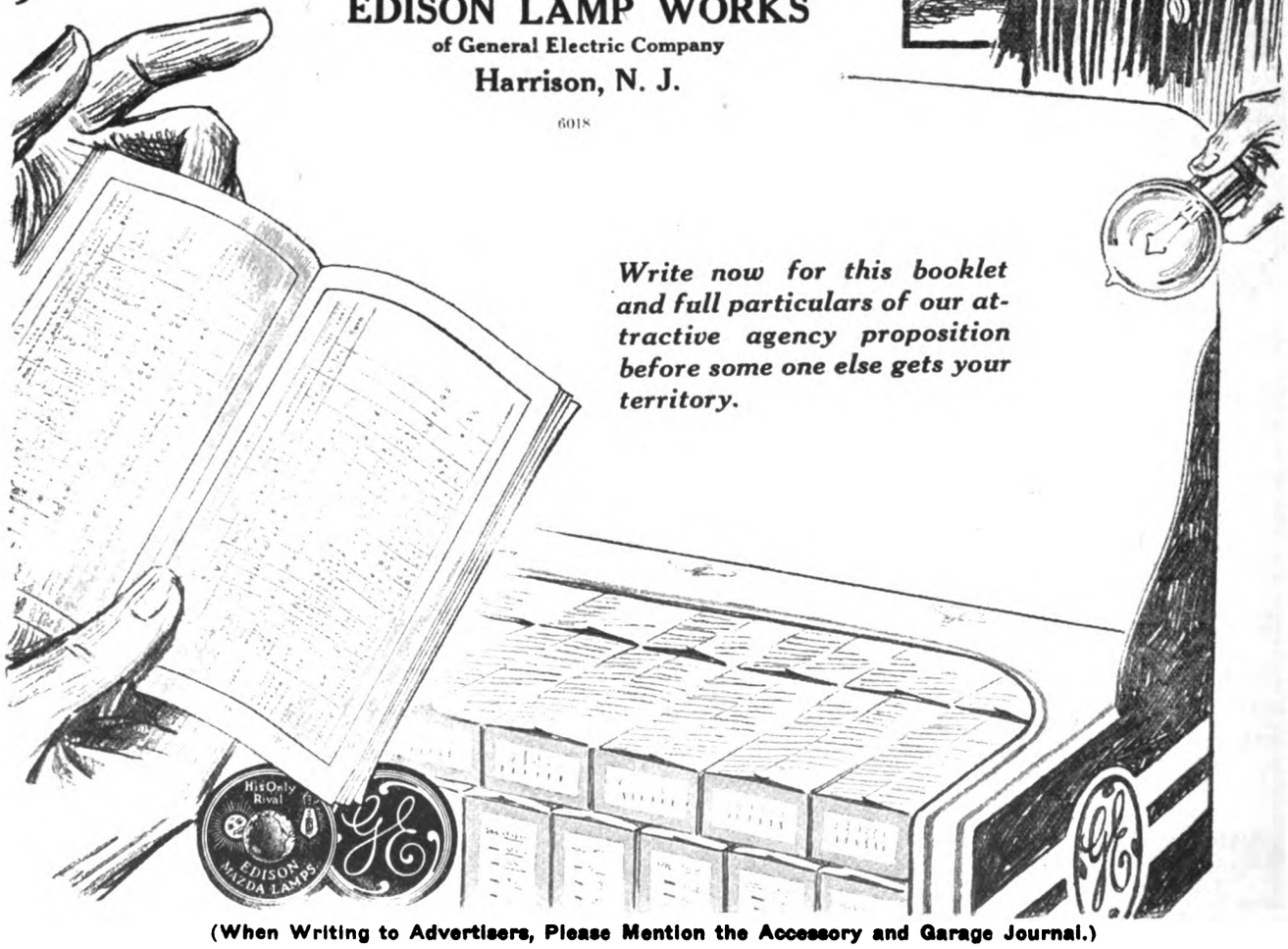
Automobile Lamp Assortment

This compact little stock contains all the sizes necessary to equip 90% of all the cars that come to your door.

Moreover, the entire assortment of less than 200 lamps costs you no more than a tire or two. And the margin of profit makes it well worth your while to make your store the headquarters for lamp renewals.

EDISON LAMP WORKS
of General Electric Company
Harrison, N. J.

6018



Write now for this booklet and full particulars of our attractive agency proposition before some one else gets your territory.

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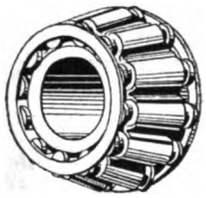
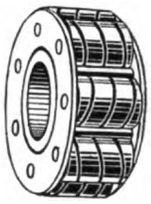
Announcing a Union Service for——

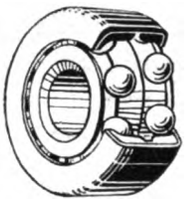
Timken
Roller Bearings



Hyatt
Roller Bearings



New Departure
Ball Bearings



The separate service stations formerly maintained by the Timken Roller Bearing Company, the Hyatt Roller Bearing Company, and the New Departure Manufacturing Company, have been united.

From now on, the *Bearings Service Company*, as the direct representative of these three companies, will provide through one union station in each principal city, the service formerly rendered by these organizations.

These union stations will provide an immediate, efficient, on-the-spot bearings service. The owner of any motor vehicle—automobile, motor truck, farm tractor or motorcycle—or any garage or repair man may here secure any anti-friction bearing needed for any make of motor vehicle manufactured.

The *Bearings Service Company* opened the first of its chain of union stations in the cities of New York, Detroit, Chicago, Boston, Atlanta, San Francisco, Los Angeles, Seattle and Minneapolis on September 7th, 1916. You are invited to make full use of the advantages of this unique service.

BEARINGS SERVICE COMPANY

General Offices Detroit, Michigan

BEARINGS SERVICE COMPANY

Branches in all Principal Cities

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AC Plugs Regular Equipment on these Cars

Packard	Buick	Kissel Kar
Pierce-Arrow	Oakland	Palmer-Moore
Cadillac	Oldsmobile	Murray
Marmon	Jeffery	Bour-Davis
Hudson	Jackson	Premier
Chalmers	Apperson	Knox
Hupmobile	Davis	McLaughlin (Canada)
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Cole	Enger	Sayers-Scovill
Reo	Lexington-Howard	Crane-Simplex
Paige	Brockway Truck	Singer
Peerless	Chase Truck	Stephens
Dodge Brothers	Daniels	United Truck
Stearns-Knight	Empire	Wilcox Trux
Saxon	Federal	Jordan
Stutz	G. M. C.	Liberty
National	Gramm Trucks	
Velie		

OWNERS! The men who OK the equipment of the most efficient cars built, have, after the most exhaustive tests known to engineers, placed their seal of approval on AC Spark Plugs by equipping their cars with AC plugs. Take advantage of their judgment, make sure your car is AC equipped.

Accept no spark plug unless it has AC burnt into the porcelain

Champion Ignition Co., Flint, Mich.

Sole Manufacturers of

AC

The Standard Spark Plug of America

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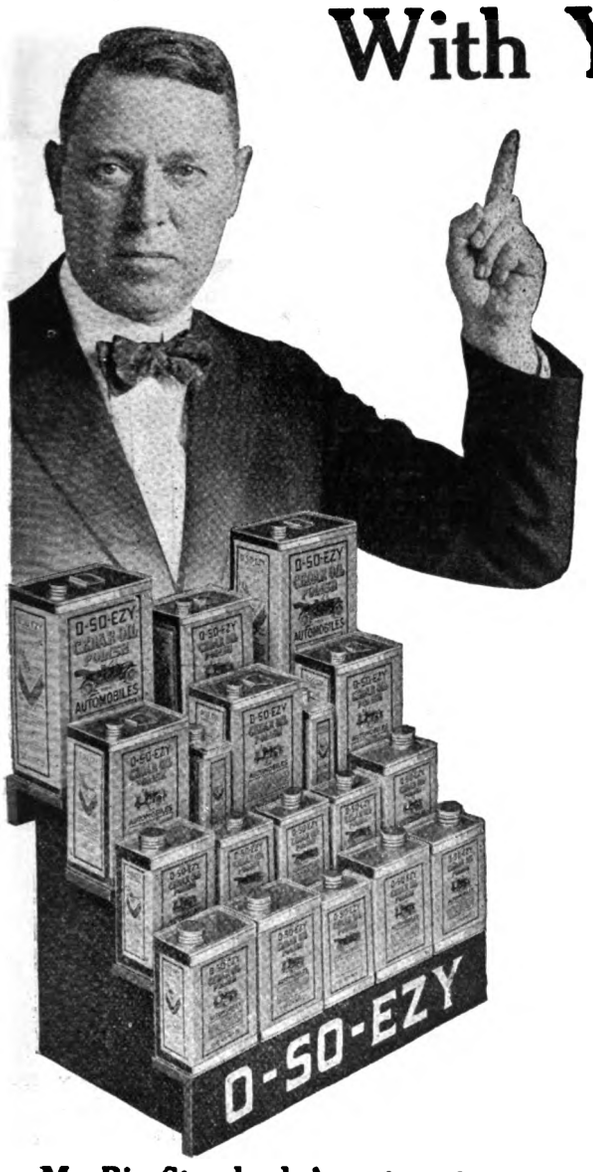
"$5,000 for Five Minutes With You, Mr. Merchant"



I'm Paying it Here and in other Publications to Tell You about My Big Special Offer On O-So-Ezy Cedar Oil Polish.

I make O-So-Ezy.

For more than two years I made it—in a small way.

Now I am making it on a great scale of production—a scale that is growing greater every month.

My business became a big business when thirty automobile manufacturers, the builders of a million cars annually, decided that O-So-Ezy is the one polish they can consistently recommend to the buyers of their cars.

When such industrial giants as Overland, Buick, Maxwell, Chevrolet, Reo, Hupmobile, Oakland, Saxon, Chalmers, Paige, Scripps-Booth, Haynes, Briscoe, Stutz, Willys-Knight, Winton, Oldsmobile, King, Interstate, Jeffery, Abbott, National, Detroiter, Empire, Grant, H. A. Lozier, Ross, Bour-Davis, Dixie and Detroit Electric made a can of O-So-Ezy standard equipment of every new car they ship, their stamp of approval enlisted for me immediately an army of a million new boosters a year for

O-SO-EZY

The Perfect Cedar Oil Polish

My Big Standard Assortment

	Each	Total	
Two 1 gallon cans	$2.50	$5.00	ALL FOR
Four ½ gallon cans	1.50	6.00	
Six quart cans	1.00	6.00	$12.00
Six pint cans	.50	3.00	
Retail Value		$20.00	f.o.b. Detroit

Mahogany Finished "Silent Salesman" FREE

These 12 Cans—$3.00 Value—Are FREE Until Nov. 1

A Total of $23.00 Worth of O-So-Ezy for $12.00

Your Profit $11.00—Nearly 100% on Your Investment

These new buyers tell their friends about O-So-Ezy. And their wives find out that a polish as supreme as O-So-Ezy for brightening motor cars is equally adaptable to their pianos, furniture and fine floors.

Your Stock is Ready

I want you to cash in on O-So-Ezy to the absolute limit, so I have carefully selected an inexpensive but complete assortment of various sizes—your ideal polish stock.

At retail this assortment inventories $20. ***My price to you is $12.***

I have mounted this stock on a handsome mahogany-finished display stand. ***The stand comes free.***

A Dozen Cans *Free.*

On top of this, until November 1st, I'm adding one dozen half-pint cans of O-So-Ezy—our regular twenty-five cent size. ***These cans won't cost you a cent.***

Twenty-three dollars' worth of O-So-Ezy and a Silent Salesman for $12.

It's nearly 100 per cent. profit on your investment!

Just Watch Them Buy!

Just stand your O-So-Ezy Silent Salesman where your trade can see it. Results will come so fast you will be amazed.

And don't forget that I'm with you all the time with a powerful advertising campaign that makes more friends for O-So-Ezy every week.

F. W. Craig

Vice President and General Manager

O-SO-EZY PRODUCTS CO.

Dodge Building Detroit, Mich.

ORDER BLANK

O-So-Ezy Products Co.
Dodge Bldg., Detroit, Mich.

Send us the Ideal Stock of O-So-Ezy as shown and described in your Accessory and Garage Journal Advertisement of September

_____

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Our Jobber is_____

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THE ACCESSORY —AND— GARAGE JOURNAL

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William H. Black, Treasurer. D. O. Black, Jr., Secretary
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ALL PARTS FOR ALL CARS.

Fenders to fit most any make of car, $12.00 set.....$3.00 each
Springs for all cars.....$3.00 up
Radiators, special sale.....$15.00 up
Ford Wire Wheels.....$12.00 set
One-man Mohair Tops, complete to fit most any make of car, complete.....$20.00
Write for Top Chart.
Rims, many different makes, all sizes.....$2.50 each
Baker Demountable Wheels, any size, with five straight side rims, per set.....$23.50
Many makes of wheels, all sizes..$3.00
Hundreds of other bargains not listed. Write for our large catalogue.

PURITAN MACHINE COMPANY.
ALL PARTS FOR ALL CARS.
51 Tenth Street, Detroit, U. S. A.

$2.00 secures form of complete and simple system for Bookkeepers and Garage Owners, showing all entries and Trial Balance. Corporation and Co-Partnership form for $1.50. Both for $3.00. G. R. Katzenmayer, 93 Pleasant St., Worcester, Mass.

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Industrial and Mechanical Engineers
1223 Filbert Street, Philadelphia.
Develop, Market and Finance Patents.
Reorganize Industries.

Accessory and Garage Journal
A Distinct Trade Publication

25,000 Copies
Each Monthly Issue

TIMES BUILDING
Pawtucket, R. I.

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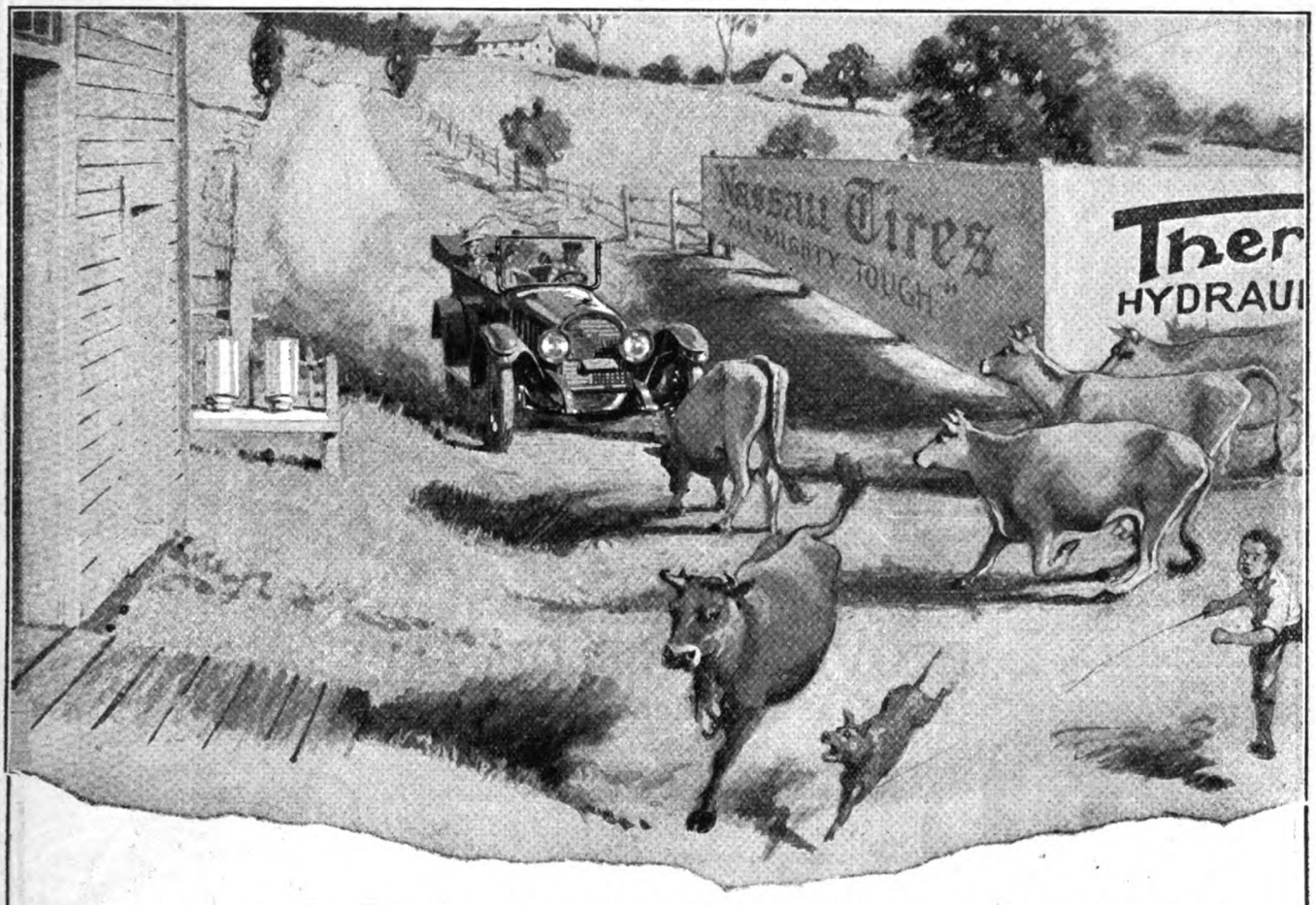

Suppose the Brakes Don't Hold in a Moment Like This?

On the brake lining you sell often depend the lives of your customers, so sell Thermoid. Here is a brake lining that always answers the call because Thermoid is all friction—100% friction (gripping power) from surface to surface. And Thermoid is safe to use until it wears as thin as paper.

Thermoid
HYDRAULIC COMPRESSED
Brake Lining - 100%

is easy to sell because it is nationally advertised. Once you sell a man Thermoid and he finds out how reliable it is, he will mention your store to his friends.

And it's easy to sell Thermoid because you can easily demonstrate its qualities. Take weight, for instance—you can prove to your customers by the scales that Thermoid averages 50% more than any woven brake lining on the market. The very appearance of Thermoid is convincing.

Thermoid is made of long-fibre Canadian Asbestos spun on brass wire, impregnated with a friction compound, folded, stitched, then hydraulically compressed into one single, solid mass. Brake lining like this *must* wear—*must* grip—*must* please—*must* be profitable to handle.

GET IN TOUCH WITH US NOW

Thermoid Rubber Company

TRENTON, N. J.

Makers of Nassau Tires and Thermoid Radiator Hose, Garden Hose, etc.

OUR GUARANTEE:

Thermoid Brake Lining is absolutely guaranteed to give more satisfactory results and to outwear any other lining manufactured. Not affected by heat, oil, water, gasoline or dirt.

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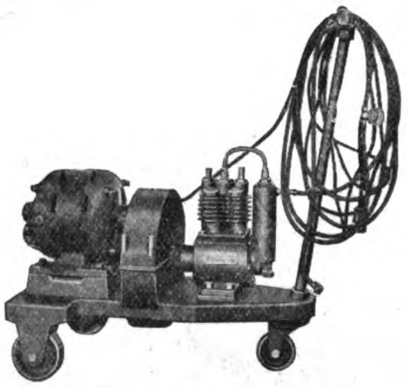


MODEL W PORTABLE

MASTER Garage Pump

For Inflating Automobile Tires
PROVIDES "AIR ON TAP"
at a moment's notice

MODEL W STATIONARY

Model W—Portable, 2 cylinder. electric-driven, 1-2 H.P.. G. E. Motor. With complete equipment ready for use.

Regular A. C. Motor—$105 F.O.B.
Regular D. C. Motor—$100 Hartford

That's what private garage owners want—That's what is necessary in big public garages.

Tires must be kept properly inflated—up to the prescribed pressure. Car owners won't wait. The air must be "on Tap."

The Master Garage Pump will properly inflate tires to the specific pressure very rapidly.

No storage tank is required.

There is a Master Model designed for every garage requirement.

The minute the current is turned on the Master begins to deliver a *steady* stream of pure air—*free from oil*—and *from any pulsation.*

Can be connected in a moment's time to an electric circuit.

It requires only the switching of an electric button to start a steady stream of pure, clean air.

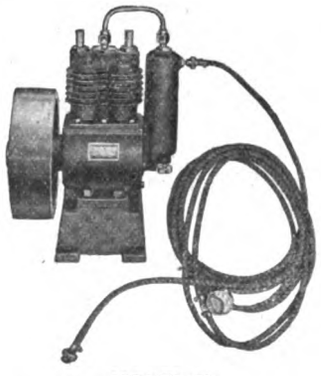
MODEL P STATIONARY

Model P—For private garages or small public garages; stationary, electric-driven. 2 cylinder 1-3 H P., G. E. Motor. Complete with equipment ready for use,

Regular A. C. Motor—$60 F.O.B.
Regular D. C. Motor—$55 Hartford

Model P—On truck, same specifications and power as Model P stationary.

Regular A. C. Motor—$65 F.O.B.
Regular D. C. Motor—$60 Hartford



MODEL Y

Complete as shown, $40 F.O.B. Hartford

Master Garage Pumps

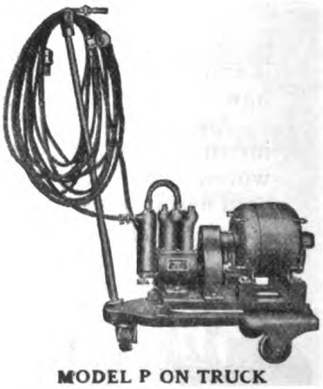
Use them ten days. They are guaranteed thus—

> **"We guarantee Master Garage Pumps for one year against defects of material or workmanship. With ordinary care and usage they should last ten years."**

Note these models and send for details of the complete line.

N. B.—All pumps are priced F.O.B. Hartford. We do not prepay shipping charges

Our stock motors are for 110 volt direct current and 110 volt single phase 60 cycle alternating current, but where necessary, we can furnish motors for 220 volt direct current, 110 volt, 25 to 40 cycle alternating current, or 220 volt. 25, 40 or 60 cycle alternating current. State current conditions when ordering.



MODEL P ON TRUCK

MASTER GARAGE PUMPS MADE AND GUARANTEED BY

HARTFORD MACHINE SCREW COMPANY

502 CAPITOL AVENUE **HARTFORD, CONN.**

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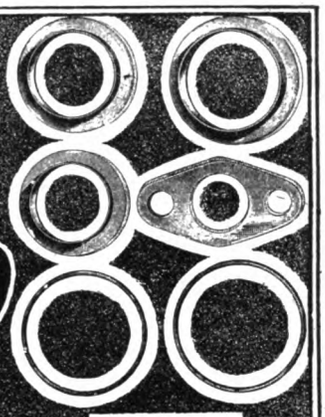
Liners—Shims

Two Point Hard Rubber Switches

Clero Hand Horn

Clero Electric Push Buttons


Cadillac Gaskets

FITZGERALD MFG. CO.

Metal Specialties

ARE YOU WELL STOCKED?

The great problem with the majority of Jobbers and Dealers, garages, repair and machine shops, is obtaining supplies of material, if quality, price and time of delivery are factors that influence purchasing.

Failure to fill orders means loss of sales and profits for the jobber and dealer, and this is reflected by dissatisfaction of customers. The sale or use of inferior metal specialties not only means unsatisfactory work—at best there can be no justification for it—but loss of business that ought logically to be retained and increased.

We Are the Largest Producers

Of standard metal specialties in the industry. We can supply any demand for such products, or special stampings, at prices lower than can be quoted elsewhere, absolutely guarantee quality and make delivery on time. Our resources—plant, equipment, capital and specializing workmen insure such marked manufacturing advantage that no other concern in the industry can compete with us. We protect our customers and the large discounts given mean substantially larger profits. If your stock is low, or you will require stock during the next few months, the time to purchase is today. Catalogue at request.

CLERO HORNS—ALL TYPES

Thousands of dealers are specializing CLERO hand-operated horns, made in types and sizes to meet every requirement. These horns are distinct in appearance, have pleasing tones, are guaranteed to be the greatest value ever offered, and they can be quickly fitted. Low sales prices, large discounts and universally established demand commend these equipment to every dealer. If you want the horn business of your territory, sell CLERO HORNS.

Address all correspondence to main office.

FITZGERALD MFG. CO.
TORRINGTON, CONN.

Perfection Snap Cable Terminal

Standard "Lug" Type Terminals

Standard Battery Con.

Perfection Spring Battery Con.

Clero Electric Push Buttons

Shim Stock

Standard French Type Gaskets

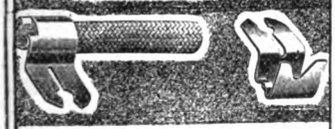
Steering Post Attachments

Ford Lighting Outfits

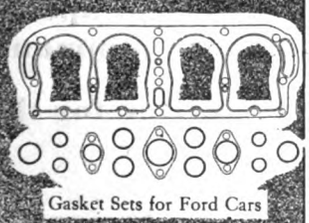
Ford Ignition Assembly

Spark Plug Gaskets Carried in Stock

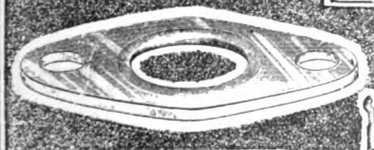
Standard Closed Type Gasket


Copper and Brass Cable Terminals

Standard Flange Fittings


Gasket Sets for Ford Cars

Overland Gaskets


Flange Exhaust Gaskets

Slip Snap Terminals

Copper-Asbestos Gaskets

Slip Snap Terminals

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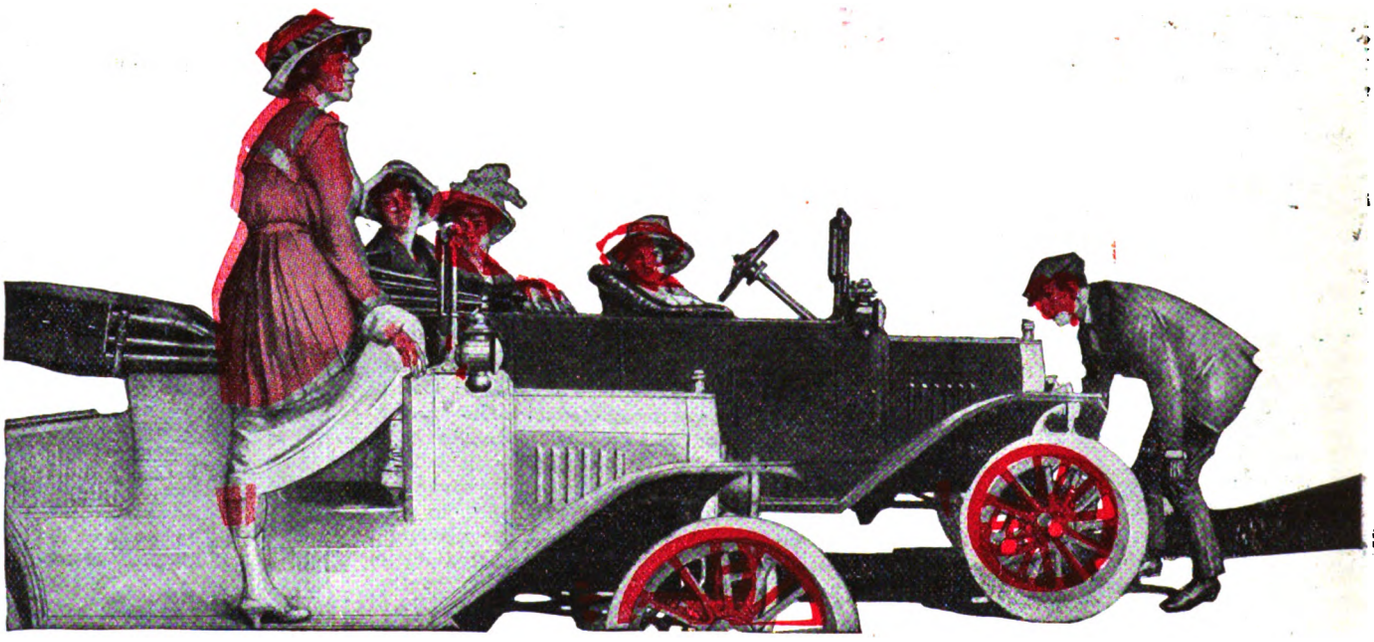
SHAFT-DRIVE

Genemotor

TRADE MARK



Why Don't You Get a Genemotor?

Genemotor matches the Ford in excellence.

It's the product of the General Electric Company, world's greatest specialists in electric motors.

Just like the Ford car, it is light, simple and strong. It is shaft-driven and that means still greater simplicity. Weighs 42 pounds.

Built to form a perfect auxiliary to the Ford engine.

Charges the battery at low speed. "U S L" Battery standard equipment.

It is the universal starter for the Universal Car.

Price $85 f. o. b. Lynn, Mass. Sold Everywhere.

A. J. PICARD & COMPANY

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VOL VI. PAWTUCKET, R. I., SEPTEMBER 1916. No. 5

United Motors Plant Valued at Over $14,000,000.

Includes 110 Buildings, Not Counting Those of the Klaxon Company Recently Absorbed.

The importance of the position occupied by the United Motors Corporation in the automobile industry is well illustrated by the composite view of the plants comprising the corporation. There are 110 buildings, not counting those of the Klaxon company, which were recently acquired and not included in the view, and they have a total floor space of 2,449,229 square feet. The value of the real estate, buildings and machinery shown in the illustration is more than $14,000,000—Klaxon not included.

The business carried on by the concerns making up United Motors, of which there are six, is of the most permanent character, a large percentage of it consisting of contracts running for a year or more. The products go to 10,318 concerns, and the output is produced by more than 14,000 workmen.

A recent estimate of the volume and character of business done shows that every one of the million and half odd motor cars that are to be manufactured this year will have as a part of its equipment one or more parts manufactured by some one of the six subsidiaries of the United Motors Corporation. This business is secure, as all the products of these companies are protected by patents.

Production figures show that in a year the five first mentioned companies, not including the Klaxon Company, produced 19,500,000 anti-friction bearings, 540,000 coaster brake hubs, 345,000 starting, lighting and ignition systems, 435,000 complete ignition systems and 7,500,000 demountable rims.

Earnings during the last fiscal year, not including either the Perlman Rim Corporation or the Klaxon Company, were $6,478,630, while estimated earnings of the same companies and the Perlman Rim Corporation, but not including the Klaxon Company for the present year, are $13,730,000, which is considered a conservative estimate.

Changes In Consolidated.

Maker of Abbott-Detroit Cars Has Been Undergoing Reorganization and Enlarged.

The Consolidated Car Company, makers of the Abbott-Detroit cars, has been undergoing a process of reorganization for the purpose of augmenting production. Several well known men in the automobile industry have taken charge of the management and operation of the concern. Guy W. Morgan, formerly a prominent factor in the Mitchell organization, was recently appointed president and general manager of the new concern. A. E. Woodworth, who was with the Buick company for years, has been appointed superintendent and production manager.

Reorganization of General Motors Planned.

Name of Company May Be Changed to Include "Corporation" and Capital Increased.

A plan has been announced for the reorganization of the General Motors Company through which that concern will become the General Motors Corporation, with a capital of $100,000,000. The plan has been consented to by more than 65 per cent. of the stockholders of the General Motors Company.

The new company, which is to be incorporated under Delaware laws, will not change materially, it is understood, the present system of operating the subsidiary companies. The capitalization will consist of 1,000,000 shares of a par value of $100 each. Of the total amount 200,000 shares will be six per cent. cumulative, non-voting, preferred stock, which will be redeemable at the option of the company at $110, plus accrued dividends on and after Sept. 18, 1918.

The merging of the old company into the new will be effected through the exchange of stock. Stock of the old company deposited with the Guaranty Trust Company of New York on and after Oct. 18, and not later than Dec. 15, will be exchanged on the following basis: For each share of present preferred stock, one and one-third shares of the new preferred; for each share of the present common, five shares of the new common.

Subsidiary Companies of United Motors Have 110 Buildings, Not Including Klaxon's.

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The annual statement of the General Motors Company, as of July 1st, showed earnings of $27,740,596, or 168 per cent. on the common stock after deducting the preferred dividend charges. In 1915 the net profit was $14,926,322. Notes of $2,328,000 were paid off out of the surplus, $1,048,964 for preferred dividend, $10,730,150 for common dividend and $3,726,752 for plant additions, leaving an increase in cash on hand and in banks of $7,950,451, as compared with the year ending in 1915.

During the fiscal year ending July 1st the total sales aggregated $156,900,296, a gain of $62,475,455 over the previous year's business.

The General Motors Company controls through the ownership of all the stock the following companies: Buick, Cadillac, Oakland, Olds, Northway, Champion Ignition, Jackson, Church & Wilcox, Westcott-Mott and General Motors Truck. It also owns $500,000 of the $1,003,000 outstanding common stock of the McLaughlin Motor Car Company.

The officers of the General Motors Company, headed by President W. C. Durant, are as follows: Vice president, A. G. Bishop; secretary, Standish Backus; treasurer, James T. Shaw; comptroller, W. H. Alford. The board of directors, of which Pierre S. DuPont is chairman, is composed of F. L. Belin, H. E. Bishop, W. P. Chrysler, R. H. Collins, W. L. Day, W. C. Durant, J. A. Haskell, L. G. Kaufman, W. C. Leland, J. H. McClement, C. S. Mott, J. J. Raskob, C. H. Savin, F. W. Warner, A. H. Wiggin.

TAXAMETER RAISES CAPITAL.

The stockholders of the International Taxameter Company of America at a recent meeting voted to increase the common stock of the company from 2500 shares of a par value of $100 each to 50,000 shares at $10 par value each, making the total capitalization $500,000.

Service School For Bosch Dealers.

Schools of Instruction Are Held in New York City, Chicago and San Francisco.

The school for the instruction of the service men of the distributors and service stations of the Bosch Magneto Company is educational in its purpose and will teach functioning of Bosch apparatus and the methods of correcting the evil result of careless handling. Thorough instruction in installation work is also given.

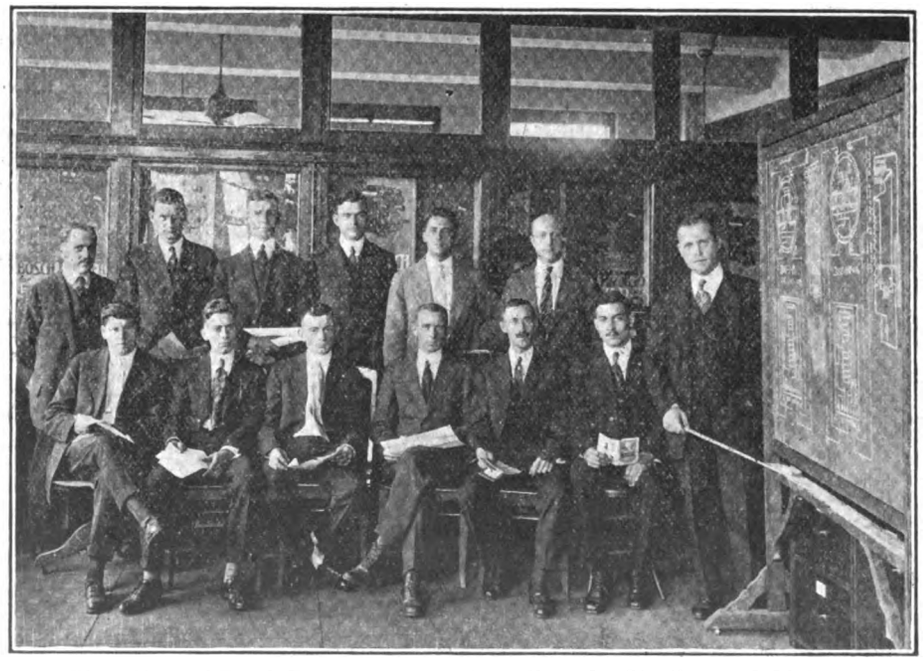
These classes are held at least once a year and more often if the occasion demands. Individual instructions will also be given, but it is preferred that the mechanics and service men attend the regular schools, which are held in San Francisco, Chicago and New York in September and November. Two classes are held in the first named month and one in the latter.

Bosch special engineering service men will visit the establishments of the distributors and service stations, following the sessions, for the inspection of these establishments as to their facilities for handling Bosch work and also an examination of the work men engaged in giving Bosch service. Class education is held at the various branches, all of which are completely equipped in every way.

Following is a list of the representatives in attendance at the starting and lighting instruction course, first class, in New York City: G. C. Jernigan of the Ozburn Automobile Supply Co., Memphis, Tenn.; F. H. Massie of the American Ball Co., Providence, R. I.; Mr. Wuerfel of the Motor Parts Co., Springfield, Mass.; C. McCoy of the Hoefer & McCoy, Atlantic City, N. J.; J. A. Mueller of the Pennsylvania Rubber & Supply Co., Cleveland, O.; Albert Bergdorf of C. Peer, Lee & Noxon, Syracuse, N. Y.; H. G. Lutz of Pennsylvania Rubber & Supply Co., Columbus, O.; H. Wechtel of the Martin-Evans Co., Brooklyn, N. Y.; A. Matheson of the Motor Parts Co., Boston, Mass.; J. S. Buckwalter of the West End Garage & Machine Co., Lancaster, Penn.; A. Wilkening of the Motor Parts Co., Philadelphia, Penn.; Mr. Rothfuss of the Motor Parts Co., Buffalo, N. Y.

The following is a list of those in attendance at the starting and lighting instruction course, first class, at Chicago:

W. Coleman, Herring Motor Co., Des Moines, Ia.; E. Trefz, Kansas City Auto Supply Co., Kansas City, Mo.; R. E. Kelly, Bering Tire & Rubber Co., Houston, Tex.; J. J. Storm, Lemke Electric Co., Milwaukee, Wis.; J. Donovan, Oskamp Auto Supply Co., Cincinnati, O.; W. Frizzell, Phoenix Auto Supply Co., St. Louis, Mo.; A. K. Chambers, Powell Supply Co., Omaha, Neb.; E. Curtice, Western Motor Supply Co., Minneapolis, Minn.; F. C. Bliss, Graham-Seltzer, Peoria, Ill.; R. Z. David, Strauss Service System, Indianapolis, Ind.; F. D. Hackett, Hackett-Harvey Co., Bloomington, Ill.; S. Gane, Michigan Tire Co., Grand Rapids, Mich.; J. E. Larson, George A. Fortin, Kankakee, Ill.; E. E. Kennedy, Galesburg Machine Works, Galesburg, Ill.; H. McGinnis, Wayne Motor Service, Ft. Wayne, Ind.; M. Renner, John S. Cox, Terre Haute, Ind.; G. S. Gustafson, Eric G. Gustafson, Rockford, Ill.; A. A. Feltes, Washington Garage, Evanston, Ill.



The First Class of Bosch Representatives Attending the Starting and Lighting Instruction Course at New York City.

TIMES SQUARE AUTO SUPPLY CO.

The Times Square Auto Supply Company, a New York corporation, which conducts a large chain of stores for the sale of accessories throughout the country, is planning to open 40 more stores in different cities. To finance the expansion an issue of $1,000,000 seven per cent. cumulative preferred stock and some common stock is being underwritten by Wollenberger & Co. of Chicago. When the business was started in 1904 the concern had a capital of less than $5000. Since then the earnings have been more than $1,500,000. The capitalization of the company, in addition to the preferred stock mentioned, includes 40,000 shares of common.

REDUCE TIRE PRICES.

The Pennsylvania Rubber Company has announced a reduction in tire prices to become effective on Oct. 1. The reductions are substantial cuts from former figures on cup bar circle and ebony tread automobile tires. This reduction is made possible, according to the statement given out by the company, through economies effected in manufacture as the result of more efficient manufacturing facilities. Absolutely no change has been made in the quality of the product.

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New Financing For Fiske Co.

Stockholders to Vote on Increase of Capital—Full Details of the Plan.

A meeting of the stockholders of the Fiske Rubber Company has been called for Oct. 2 to act upon a proposed increase of capitalization. The vote will be on an increase in capital of $12,500,000 or less, of which $7,500,000 or less is to be first preferred convertible stock and $5,000,000 or less second preferred stock. A vote will also be taken on an increase of the authorized common stock by an amount necessary to take care of the conversions of the existing second preferred and the proposed first and second preferred. The stockholders will also be asked to authorize the reduction of the authorized capital of the company by $5,000,000, being the amount of second preferred, series B, authorized a few months ago, but not issued.

The new first preferred, prior to Jan. 1, 1922, may be converted into common at 125, at the rate of four common to five preferred, and from Jan. 1, 1922, to Dec. 31, 1926, at 150 at the rate of four for six. The $2,000,000 second preferred is now convertible into common stock up to Nov. 1, 1917. It is proposed to extend this period, if the stockholders approve, to Nov. 1, 1923. The new second preferred will be identical in terms with the second preferred outstanding.

It is proposed to offer pro rata to holders of the present first preferred $5,000,000 of the new first convertible preferred stock at par and accrued dividends. Of the $5,000,000 or less proposed increase in the second preferred, half will be offered pro rata to holders of the present second preferred and common at par and accrued dividends, giving each the right to subscribe for one new share for each four held.

ENLARGE MILLER PLANT.

The Miller Rubber Company of Akron, O., is rushing the work on the new eight-story addition to the factory in order to increase the output capacity to a point where it can cope with the increased sales for the Miller black tread geared-to-the-road tire, which was recently introduced on the market by that concern.

F. C. Millhoff, general sales manager of the company, is now on a Western tour for the purpose of mapping out further extensions of the Miller national distributing system.

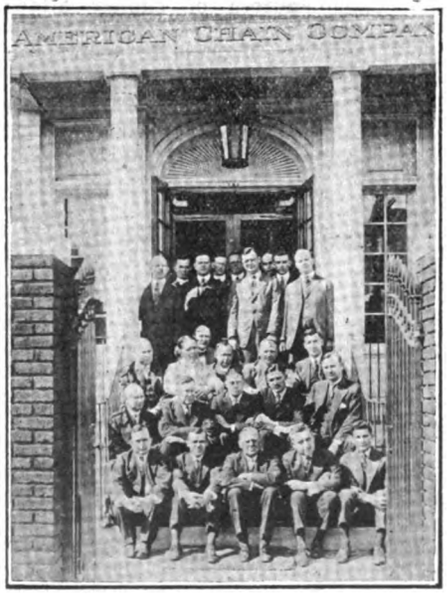
PAIGE MAKES RECORD.

The Paige-Detroit Motor Car Company shipped $2,020,200 worth of Paige cars in August, eclipsing all previous records in the history of the concern. These shipments, however, do not correctly reflect the volume of Paige orders, as 1982 cars had to be held over into September, indicating that the August record will not stand very long. The demand for Paige sixes keeps constantly increasing and the factory organization is steadily adjusting itself to cope with the increased production which has been made necessary.

F. C. Millhof, General Sales Manager, Miller Rubber Company.

STUTZ EARNINGS.

The Stutz Motor Car Company of America made net profits of $267,982 during the first five months of this fiscal year. Net sales during that period totaled $1,319,107, and the operating and expense cost was $1,031,676. An item of $36,122 for selling and general expenses was deducted from the gross profits remaining, and a special item of $16,725 of other income was in turn added, bringing the net to the figure quoted. The stock of the company has been listed on the New York Stock Exchange.



Salesmen of the American Chain Company on the Office Steps of the Bridgeport (Conn.) Plant During Recent Salesmen's Convention.

Increase In Saxon Dividends.

Net Earnings up to June 30 Were Reported as $1,316,273, or About 20 Per Cent.

The dividend declared by the Saxon Motor Car Corporation of 1¾ per cent., payable Oct. 2 to stockholders of record Sept. 29, shows an increase of one-quarter of one per cent. as compared with the last previous dividend of 1½ per cent., which was paid in July.

The first annual report of the company covers operations up to June 30 of this year and shows net earnings of $1,316,273, or over 20 per cent. on the $6,000,000 capital stock. Current assets at the close of the fiscal year were $3,123,879, as compared with current liabilities of $907,222, leaving a surplus of working capital of $2,216,657. The balance sheet for the year is as follows:

Assets.

Plant and equipment	$73,914
Investments	7,500
Cash	596,722
Notes and accounts receivable	392,830
Inventory	2,134,327
Deferred charges	18,143
Good will, models, patents	4,557,229

Liabilities.

Capital stock		$6,000,000
Notes and accounts payable		907,222
Surplus, profits for eight months, from Nov. 1, 1915	$963,443	
Less dividend	90,000	
		873,443

During the year 25,399 cars were manufactured as compared with 12,099 cars during the year ending June 30, 1915. It is expected that the production for the ensuing year will be 40,000 cars.

SALESMEN ENTERTAINED.

The American Chain Company, Inc., of Bridgeport, Conn., manufacturers of Weed chains and other Weed products, held a salesman's meeting at the factory during the week of Sept. 4-9, which was attended by the company's representatives from all over the country. W. W. Taussig, general sales director, conducted daily meetings and conferences at which addresses were given by the heads of the various departments, including sales, service, advertising, engineering, production and experimental. Following an inspection of the Bridgeport plant, which is being enlarged, President W. B. Lashar took the representatives to the company's plant at York, Penn., where extensive additions and improvements are in the course of construction. When the additions have been completed at both plants the capacity of the American Chain Company will have been doubled.

All of the company's export business has been diverted to the Dominion Chain Company, Ltd., of Niagara Falls, Ontario, which concern has been handling the foreign orders since the early summer of 1915.

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Reorganizing International Co.

Big and Important Financial Deal Has Been Carried Out—New Capitalization Basis.

A plan for the reorganization of the International Motor Company, involving the raising of $1,500,000 additional cash and the wiping out of $2,881,000 indebtedness in the form of notes, has been perfected through the organization of a new company which will take over the old concern. The plans were carried out by a committee headed by Henry K. Pomeroy, former president of the New York Stock Exchange, and his efforts have received high commendation, as the notes owed by the company, with accrued interest, totaled nearly $3,000,000, and are all due on Nov. 1.

The new company will have the same name as the old, but will be capitalized on a different basis. An issue of $4,381,000 seven per cent. first preferred accumulative stock will be made to meet the notes and provide cash working capital, while there will also be an issue of $2,723,000 second prefererd stock and an issue of 53,638 shares of common stock. Holders of the present $3,600,000 preferred will receive 60 per cent. in the new second preferred and 10 per cent. in common. For the outstanding $5,628,125 common stock the holders will receive 10 per cent. in second preferred and 10 per cent. in common of the new company.

The International Motor Company owns all of the stock of the Mack Brothers Motor Car, the Sauer Motor and the Hewitt Motor companies. Vernon Munroe is president and Ambrose I. Monnell, president of the International Nickel Company, is chairman of the board of directors.

Earnings for the past year were $661,000 net, but owing to the big deficit that the company was carrying there was a deficit at the end of the year of $2,457,000.

FRIEND HEADS MITCHELL.

Otis C. Friend has been elected president and general manager of the Mitchell Motors Company, Inc., of Racine, Wis., to succeed H. L. McClaren, who recently resigned. This announcement came very unexpectedly in the automobile industry, as Mr. Friend, less than three months ago, resigned his position as general sales manager of the Mitchell company to become vice president and general manager of the United Motors Corporation of New York.

Mr. Friend has climbed every rung in the ladder of the Mitchell organization, having first been connected with the concern in 1904 as a salesman with the Chicago agency. He later became a dealer and was purchasing agent, factory manager, advertising manager and sales manager of the Mitchell company.

John W. Bate, vice president, chief engineer and factory manager, remains with the Mitchell company, as do W. H. Armstrong as secretary and treasurer, and F. L. Mitchell as comptroller.

WILLYS-OVERLAND CAMPAIGN.

John N. Willys of the Willys-Overland Company of Toledo, O., has announced that the advertising campaign to be conducted by that concern for the ensuing year will be on a more extensive scale than ever before.

"Advertising is just as essential in the modern manufacturing business as is the factory in which the product is turned out," says Mr. Willys, "and if you are building a product of real worth and merit, it is obvious that you should inform the public of that fact and thus build up a market for your product. The man who has something worth while to sell and does not advertise that fact is hiding his light under the proverbial bushel, and nine times out of 10 he gets nowhere."

Cooks Patents Co. Incorporated.

New Concern Organized to License Cook Patents and Develop Truck Attachments.

The Cook Attachment Patents, Inc., organized in New York state, with a capital of $10,000, for the purpose of issuing licenses under the Cook patents, will also work to develop and amalgamate the truck attachment business.

The Cook patent, which is now in litigation in the courts at Chicago, is claimed to be the basic patent covering truck making attachments. The Redden Motor Truck Company is the licensee under these patents and it is stated that six manufacturers of similar attachments have already discussed arrangements with Mr. Redden for manufacturing under the Cook patents.

Mark W. Norman, a New York attorney, is president and treasurer of the new company and B. H. Barber secretary.

MUTUAL MOTORS BUYS PLANT.

The Mutual Motors Company, manufacturers of the "Marion-Handley" Six, have purchased the large plant of the Imperial Automobile Company at Jackson, Mich., which the concern has occupied for the past year and a half.

J. I. Handley, president of the Mutual Motors Company, in speaking of the acquisition of the plant, said: "It is ideal for our purpose. We have the facilities and room for the production of 100 cars a day. The main line of the Michigan Central railway passes our side of the main building and we have six tracks or spurs leading direct from the main line to the stock room and shipping docks."

Maxwell Shows Big Increase.

Earnings for Fiscal Year Were About $5,500,000—Sales of Cars Increased 88 Per Cent.

The earnings of the Maxwell Motor Company, Inc., for the fiscal year were $5,426,000, after deducting $500,000 for depreciation, an increase of 135 per cent. over the previous year.

The remaining surplus, after allowing seven per cent. on the first preferred and six per cent. on the second preferred, was equal to 30 per cent. on the common stock of the company. At the close of the year the net working assets of the company and its subsidiaries was $11,176,783.26, an increase of $3,500,000 as compared with the close of the year previous. The cash on hand is $3,269,552.50, as compared with $2,652,628.60 at the close of the fiscal year in 1915. The sales of cars increased 88 per cent. during the year and the production facilities at the factories have been increased to enable an output of approximately 120,000 cars a year.

SALESMEN AT PAIGE FACTORY.

C. W. Payne, president of the Payne Motor Company of Des Moines, Ia., recently entertained 35 of his sub-dealers at the Paige factory in Detroit, as a reward for their efficient efforts in distributing the Paige Fairfield "Six-46" in the territory controlled by Mr. Payne for that car.

The men remained in Detroit for a week, during which time they assembled to hear addresses by President Harry M. Jewett and Sales Manager Henry Krohn of the Paige company.

L. H. BILL LEAVES NASH.

Louis H. Bill, general manager of the Thomas B. Jeffery Company of Kenosha, Wis., which has become the Nash Motors Company, has resigned his position and Jerry De Cou, who has been factory manager for a number of years, has also tendered his resignation. Mr. Bill, who leaves for his home in California on Oct. 1, has been with the Jeffery people for over 12 years and Mr. De Cou has been connected with the company for a longer period.

SWEET JOINS UNITED MOTORS.

William M. Sweet, who has been general manager of the Motor and Accessory Manufacturers for the past 10 years, has been appointed assistant to A. P. Sloan, Jr., president of the United Motors Corporation. Mr. Sweet, who takes up his new duties at the company's offices, 33 West 42nd street, New York City, on Oct. 16, will have the management of the corporation under the direction of President Sloan and the board of directors.

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Committees For N. A. C. C. Named.

Prominent Industrial Men Named for Important Positions for the Ensuing Year.

President Charles Clifton of the National Automobile Chamber of Commerce has completed the make-up of the committees that will take up the active work of the organization for the ensuing year.

The personnel of the committees is as follows: Patents: C. C. Hanch, Studebaker, chairman; William H. VanDervoort, Moline; Winsor T. White, White; Wilfred C. Leland, Cadillac; Howard E. Coffin, Hudson.

Traffic: William E. Metzger, Argo electric, chairman; R. E. Olds, Reo; A. I. Philp, Dodge.

Show: George Pope, chairman; Wilfred C. Leland, Cadillac.

Legislative: H. H. Rice, Waverly, chairman; J. Walter Drake, Hupp; J. I. Farley, Auburn.

Electric Vehicle: H. H. Rice, Waverly, chairman; Fred R. White, Baker R. & L.; W. C. Anderson, Anderson.

Commercial Vehicle: Winsor T. White, White, chairman; Alvan Macauley, Packard; H. Kerr Thomas, Pierce-Arrow; P. D. Wagoner, General Vehicle; M. L. Pulcher, Federal.

Good Roads: Roy D. Chapin, Hudson, chairman; William E. Metzger, Argo electric; C. C. Hanch, Studebaker.

Hand Book: Carl H. Pelton, Maxwell, chairman; A. I. Philp, Dodge; A. L. Riker, Locomobile.

Membership: Wilfred C. Leland, Cadillac, chairman; Hugh Chalmers, Chalmers; C. W. Churchill, Winton.

H. & N. IN LONG ISLAND CITY.

Because of the great demand for the H. & N. automatic gasoline and kerosene carburetor, the manufacturer, the H. & N. Company, has been forced to take up larger manufacturing quarters in a new and completely equipped plant at 138 West avenue, Long Island City, N. Y., close by the Queensboro bridge, the Steinway tube and the 34th street ferry. Heretofore this company has maintained a very complete plant in Manhattan, but as the demand for the carburetor increased it was compelled to have a great amount of its work done outside because of limited factory facilities, which was the cause of exasperating delays in delivery and disappointments to customers.

The H. & N. Company will maintain and enlarge its service station at 38 West 62nd street, in the heart of Manhattan's automobile section. The main office and retail sales department will be removed from 1790 to 1675 Broadway (between 52nd and 53rd streets) on Oct. 1.

The company has been well known among car owners for the past five years, but it is only within the past year, since the control of the company has been taken over by very strong interests, that any effective effort has been made to extend the business. At present the company has branches in Boston, Philadelphia, Los Angeles and Detroit. It has agencies and service stations throughout the country and they are now planning a national advertising campaign to place the merits of the H. & N. carburetor before the public, demonstrating its remarkable increase in mileage, speed and power. The carburetor is sold with a satisfactory guarantee of performance, or money refunded.

John W. Ruse died at Kenosha, Wis., on Sept. 15 of heart failure. Mr. Ruse was well known in the automobile industry, having been connected with the Buick organization for eight years and recently with the Nash Motors, manufacturers of Jeffery cars and trucks.

New Gramm-Bernstein Co.

New Organization Formed to Take Over Truck Making Concern. Capital $4,000,000.

The Gramm-Bernstein Motor Truck Company, an Ohio corporation, has been organized with $4,000,000 capitalization to take over the Gramm-Bernstein Company of Lima, O., manufacturers of the trucks of that name.

The capital of the new company is divided into $3,000,000 of common stock and $1,000,000 of preferred stock, and the par value of both classes is $10 a share. The officers are: M. Bernstein, president and treasurer; B. A. Gramm, vice president and general manager; H. O. Bentley, secretary and legal adviser; R. H. Spear, director of sales.

Spicer Sells Block of Stock.

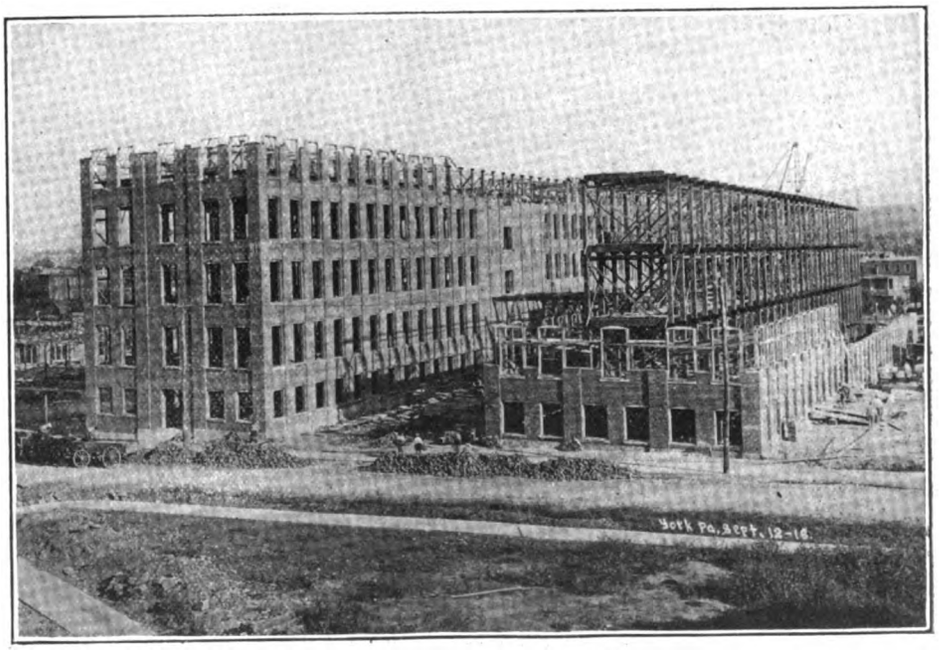
Maker of Universal Joint Obtains Money for Purposes of Expanding Facilities.

An issue of $1,500,000 eight per cent. cumulative first preferred stock of the Spicer Manufacturing Company has been sold to a group of investment bankers and will be offered for public subscription at 100 and accrued dividends. It can be converted at any time into common stock on a basis of share for share.

For the past four years the company has been running full time, making universal joints that are standard on over 100 different makes of automobiles. Additional plant facilities have been provided for and machinery is now being installed to bring the 1917 production up to 700,000 joints. It is understood that application will soon be made to have the company's shares listed on the New York Stock Exchange.

BUYS INTO FRAZER & JONES.

T. W. Meachem, president, and T. G. Meachem, vice president of the New Process Gear Corporation of Syracuse, N. Y., have secured an interest in the Frazer & Jones Company, manufacturers of malleable iron castings and harness hardware. The Frazer & Jones Company is an old established concern, doing a large business in both malleable iron castings and staple lines of harness goods and has recently completed a new plant at Solvay, N. Y., a suburb of Syracuse, for the expansion of their malleable iron casting business. T. G. Meachem was recently elected a director of the Frazer & Jones Company.



Extensive Addi tions Being Made to the American Chain Company's Plant at York, Penn.

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Plan To Avert Car Shortage.

N. A. C. C. Notifies Members to Urge Unloading Shipments as Promptly As Possible.

The National Automobile Chamber of Commerce in order to avert the serious effects of the present car shortage, has notified its members to urge upon dealers the necessity of unloading all shipments promptly so that the automobile cars can be returned quickly to the factories for more shipments. The chamber is also seeking the co-operation of the railroads in the work.

Car balances of the American Railway Association show a shortage of 14,281 freight cars, which is the lowest supply ever reported at this time of year, when usually there is a surplus. Last year at this time the surplus was 264,243 cars. The industry consequently is facing a serious handicap unless there is close co-operation all around among the dealers, manufacturers and railroad company, as shipments in this line are made in the special automobile cars, which will be the first to feel the shortage of equipment. The use of freight cars by dealers for storage purposes should be discouraged by all means, as it is the empty car that is needed above everything else to relieve the situation.

The N. A. C. C., through its traffic department, is giving the matter close attention. Railroads throughout the country are advised daily of shipments en route to them, so that the automobile cars may be closely supervised and returned. Watch is being kept on the number of automobile cars on each railroad and an effort will be made to keep them rolling.

A committee of four traffic managers, consisting of H. R. Moule (Chalmers), chairman; H. Higginbottom (Dodge), H. M. Newlin (Maxwell)and C. W. Eggers (Willys-Overland) has been formed to co-operate and confer closely with the traffic department of the chamber on this question of car supply, and the department will put into effect any action that may be helpful.

A committee of five railroad operating men has also been appointed, consisting of C. H. Bieber (Michigan Central), chairman; H. J. Merrick (New York Central), C. B. Strohm (Santa Fe), J. W. Roberts (Pennsylvania lines) and E. E. Betts (Chicago & Northwestern), to give the handling of automobile equipment special thought and co-operate with the chamber in proper supervision of the cars.

UNION PRODUCTS COMPANY.

The Union Products Company of Rockford, Ill., recently incorporated with a capital of $200,000, has completed plans for a large factory building and work is being rushed on special machinery which will be used in the manufacture of automobile accessories and parts.

It is understood that the principal product for a time at least will be a piston ring invented by D. D. Shierk. An exclusive manufacturing license has been obtained of the inventor. Similar licenses have also been obtained on six patents issued and four that are pending for the manufacture of automobile and other kinds of wire wheels.

A. A. Martin, formerly vice president and sales manager of the Burd High Compression Ring Company of Rockford, and who was largely instrumental in developing that concern into a high state of prosperity, is president and general manager of the Union Products Company. W. E. Williams, well known as an inventor of labor saving machinery and consulting engineer of the American Steel Foundries, is chief engineer. The other officers are: M. R. Harned, vice president, and secretary, H. F. Norris.

New Tire Co. Incorporated.

Keystone Rubber and Tire Company of Pittsburg Formed—Plant at Penn Station.

The Keystone Rubber and Tire Company of Pittsburg, Penn., has been incorporated and a large plant is being erected at Penn station, a suburb of Pittsburg, where automobile tires will be manufactured. The Keystone tire will be manufactured by a secret process. It is said to be puncture proof and will carry a guarantee of 20,000 miles. It is expected that the new plant, a three-story structure, 190x160 feet, will be completed within 60 days and that production will commence within 90 days. About 600 hands will be employed.

All the capital stock of the concern is held by the promoters of the company and officials. C. C. Goelitz is president; M. R. Haymaker, vice president; R. S. Robb, treasurer, and they and the following make up the directorate: Cornelius D. Scully, John D. Graham, Max J. Spann and John A. Sharpe.

NEW M. A. M. MEMBERS.

The Au-To Compressor Company of Wilmington, O., the F. W. Mann Company of Milford, Mass., and the West Side Foundry Company of Troy, N. Y., have joined the Motor and Accessory Manufacturers.

ALLEN MOTOR COMPANY DIVIDEND.

A dividend of 31 per cent., of which 25 per cent. is in stock, has been declared by the Allen Motor Company of Fostoria, O. The remaining six per cent. was paid in cash. A report was made to the directors of the company that orders for 15,000 cars would be booked by the first of the year.

N. A. A. A. J. In Session.

Second Annual Meeting Held in St. Louis with Record Attendance Anticipated.

The second annual meeting of the National Association of Automobile Accessory Jobbers will be held at the Planters' hotel, St. Louis, on Oct. 4, 5 and 6.

On the first day a general session of the association members will be held at 10 a. m. The local members are making extensive arrangements for the comfort, convenience and entertainment of the members and their wives and a very enjoyable time can be anticipated.

The delegates, their wives, daughters and friends will be taken on an automobile tour through the city on Thursday and later to the Sunset Inn, where dinner will be served and followed by an entertainment. This diversion has been arranged through the courtesy and hospitality of the Curtis Pneumatic Machinery Company, the McQuay-Norris Manufacturing Company and the Sure Enough Manufacturing Company of St. Louis.

President Dean of St. Paul and W. K. Norris of St. Louis have offered trophies for a golf tournament to be held on the course of the Glen Echo Club on Saturday, Oct. 7.

At the afternoon session on Wednesday an open meeting will be followed by address by Charles Nagel, ex-secretary of the interior of the United States, and H. G. Wilson, traffic commissioner of the Toledo Commerce Club.

KELLY-SPRINGFIELD TO MOVE.

The Kelly-Springfield Tire Company of Springfield, O., will move its plant in the near future to Cumberland, Md., where a new factory will be erected with sufficient room and facilities to triple the company's production. The officials of the city of Cumberland offered a free site and a bonus of $750,000 if the company would move to that city. The negotiations have not been closed as yet, but reports emanating from reliable sources state that there is little doubt but what the offer will be accepted, as in their present location they are both cramped for room and housing facilities for the help.

HERSCHELL-SPILLMAN MOTORS.

The Herchell-Spillman Company of North Tonawanda, N. Y., motor manufacturers, have closed with the W. E. Seagrave Company of Walkerville, Ontario, for eight-cylinder motors to be put into commercial trucks. The Seagrave company has long been prominent in the fire apparatus trade and has recently taken up the construction of high grade trucks and are understood to be the first to put an eight-cylinder engine into a commercial vehicle. Demonstrations of this model will be held in the near future.

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Plan to Sell Haynes Company.

New Syndicate Proposes to Purchase Indiana Automobile Concern for $4,500,000 Cash.

The Haynes Automobile Company of Indiana may be sold to the Haynes Automobile Company of New York, the latter corporation being formed of a number of New York financiers. The deal has not been consummated as yet, the new concern having 90 days in which to complete the purchase.

On Aug. 23 the stockholders of the Haynes company of Indiana ratified an agreement with a representative of the New York syndicate by which they are to receive $4,500,000 and half of the stock of the holding company. Six shares of the holding company's stock will be given for one share of the old stock and the holding company retains 600,000 shares of stock, the remainder to be offered for subscription on the market. The old stockholders also reserve the right to elect half the members of the board of directors.

It is understood that A. G. Sieberling, who has been manager of the company for several years, will continue in that capacity, as will also his assistants. It is also reported that a cheaper car than the present model will be added to the line, to be known as the Junior Haynes.

PENNSYLVANIA RUBBER COMPANY.

The Pennsylvania Rubber Company of New York, with a capital of $6,000,000, was formerly the Pennsylvania Rubber Company of Jeannette, Penn. The new company was incorporated by H. W. DuPuy and S. G. Lewis of Jeannette, and G. A. McLoughlin of New York City.

The old concern was capitalized for $2,000,000, of which amount $1,750,000 is outstanding.

REPUBLIC REORGANIZATION.

The entire business and assets of the Republic Motor Truck Company, Inc., of Alma, Mich., have been taken over by the Republic Motor Truck Company, Inc., which has been chartered under the laws of New York, with an authorized capital of $1,000,000 seven per cent. cumulative preferred stock and 62,500 shares of common stock of no par value.

The $750,000 par value preferred stock that has been issued was purchased by Messrs. George H. Burr & Co., bankers.

LAYMAN-LOWY MOTOR CAR CO.

The Layman-Lowy Motor Car Company has been incorporated under the laws of New York with a capital of $5000. It is reported that they will manufacture a novel design of motor car to sell at $8000, this price being for the chassis alone.

M. C. Mayer, Winthrop S. Horton and George B. Rubenstein are the incorporators. Leo L. Lowy, Emil Lowy and Ralph E. Layman incidentally incorporated the Lowy Patent Corporation to hold the patents for the various new construction designs that are being introduced into the new car, which will not be shown to the public until the New York show, next January.

Two features of the car are a new type axle and a transmission made up of only five parts, which the inventor claims will entirely eliminate the possibility of clashing gears.

BODY FACTORY IN FRAMINGHAM.

The Bela Body Company of Amesbury, Mass., will occupy the factory at Framingham, Mass., formerly used by the Standard Woven Fabric Company, which has been moved to Walpole. There is about 40,000 square feet of floor space in the factory, which is of cement construction, three stories in height, 53 feet wide by 224 feet in length.

United Motors' Bright Prospects.

Interesting Summary of Conditions and Growth of Industry Given in Prospectus.

The United Motors Corporation has issued a 64-page prospectus which gives an interesting summary of conditions and the growth in the automobile industry in their relation to the concern's business.

The prospectus describes each of the five units comprising the United Motors Corporation and is well illustrated. Speaking of the outlook the prospectus says:

"Orders already placed assure the equipment of the million and a half cars that are to be built in 1917 with at least one of the parts made by these united companies. A great majority of these cars will have three or four of these products and many will have all of them.

"Couple with these figures the ever increasing demand for many million antifriction bearings in tractors, motor trucks, farm implements of all kinds, automatic machinery, mine cars, electric motors, line shafting and various other commercial applications, besides the demand for ignition systems for motor boats, gasoline engines and tractors, and the demand for these products may be realized.

"In order that the automobile may run there must be a power to crank the engine, sparks to fire the cylinders and light for it to make its way in the dark. There must be anti-friction bearings wherever there is a turning part. In fact, the motor car, as we know it today, would be impractical were it not for antifriction bearings and for those other devices which make it easy and convenient of operation."

Briscoe Takes Parts Plants.

All Plants Making Briscoe Parts Are Now Under Direction of Motor Corporation.

Benjamin Briscoe, president of the Briscoe Motor Corporation, has announced that all plants making parts that enter into the manufacture of the Briscoe car have been taken over by the parent organization and that the Briscoe car is now being built complete in the factory at Jackson, Mich. Motors, frames, transmissions, forgings, axles, fenders, tops, steering gears and all other parts, with the exception of accessories, are manufactured from the raw material.

The new policy was announced, together with the fact of S. H. Humphrey's election as vice president, in charge of manufacturing. Mr. Humphrey is one of the best known quantity producers in the business, and was formerly a vice president of the Chalmers Motor Company of Detroit.

AMS TO BUILD AUTOS.

Charles M. Ams, president of the Sterling Auto Manufacturing Company, Paterson, N. J., has announced that the concern's business will be removed to Amston, Conn., formerly Turnerville, which was purchased by Mr. Ams several years ago. A new plant is being erected at Amston, where automobiles will be manufactured. It is understood the company will put a roadster, five-passenger car and a light delivery wagon on the market this fall.

ARBENZ CAR REVIVED.

The Arbenz Motor Car Company of Chillicothe, O., incorporated under the laws of that state, with a capital of $1,000,000, will resume the manufacture of the Arbenz car, which has not been on the market for several years. The new concern has taken over the old Arbenz Car Company. M. F. McFadden, E. C. Spoder, M. C. Hayes, W. J. Purcell and R. I. Pillars are the incorporators.

PARKER RIM CORPORATION.

The Parker Collapsible Rim Corporation has filed a charter at Dover, Del., under which they will manufacture and deal in rims and other parts of all kinds of vehicles. The capitalization is $5,000,000.

DANIEL'S PRICE $2800.

The price of all models of the Daniels car, manufactured by the Daniels Motor Car Company of Reading, Penn., has been advanced $200, the price now being $2800.

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Reo Companies To Amalgamate.

The Car and Truck Companies Are to Be Consolidated to Obtain Better Organization.

A combination of the Reo Motor Truck Company and the Reo Motor Car Company is to be effected in the near future by the exchange on an equal basis of the shares of the two concerns. The interests of the two companies being largely identical, it was decided that a more efficient organization and more economical operation could be obtained by a consolidation.

The Reo Motor Car Company sent out a notice that it would purchase all the stock of the Reo Motor Truck Company delivered to the Capital National Bank at Lansing, Mich., or to the secretary of the Reo Motor Car Company, D. E. Bates, on or before Sept. 20, paying for the stock in shares of the Reo Motor Car Company.

In anticipation of a further expansion in the company's plants the Reo Motor Car Company has purchased a site of land covering three city blocks, which, together with its other holdings, gives it control of over half a mile of land extending along the tracks of the Grand Trunk railroad.

KLAXON IN UNITED MOTORS.

The Lovell-McConnell Manufacturing Company of Newark, N. J., manufacturer of the Klaxon horn, has been purchased by the United Motors Corporation and will be made one of the subsidiaries of the latter concern, together with the five other companies already merged, the Perlman Rim Corporation, Remy Electric Company, New Departure Manufacturing Company, Hyatt Roller Bearing Company and the Dayton Engineering Laboratories Company.

The name of the latest acquisition of the United Motors has been changed to Klaxon Company and the concern's productive capacity will be immediately doubled to care for the enormously increased business which has been recently acquired. One of the concern's largest contracts is with the Willys-Overland Company, to run for a term of years, and term contracts have also been made for the exclusive use of this horn on all cars manufactured by the Buick, Cadillac, Oldsmobile, Oakland, Scripps-Booth and Chevrolet companies.

JORDAN INCREASES OUTPUT.

The Jordan Motor Car Company of Cleveland, O., in its new plant is turning out five cars a day and it is expected that this rate of production will be doubled within a month.

MURRAY EIGHT ANNOUNCED.

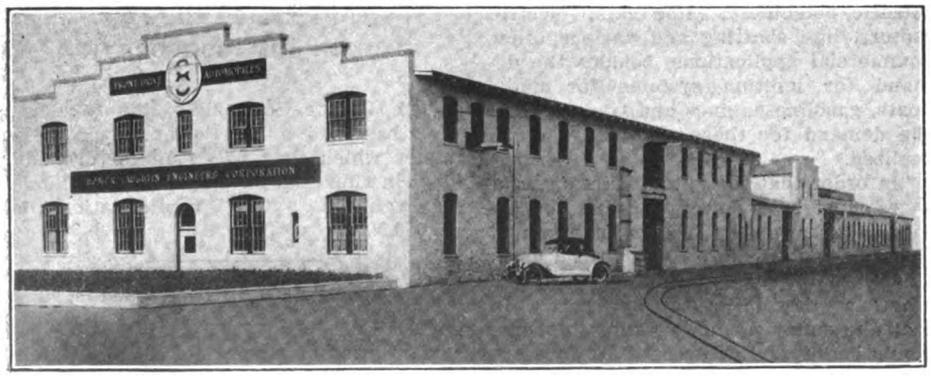
The Murray Eight, manufactured by the Murray Motors Corporation of Pittsburg, Penn., has been thoroughly tested and is now on exhibition for dealers and agents.

Firestone To Increase Stock.

Capitalization May Be Raised from $4,000,000 to $50,000,000 and Dividend Declared.

At a meeting of stockholders of the Firestone Tire and Rubber Company of Akron, O.. to be held Sept. 30, a vote will be taken on a proposition to increase the capital stock from $4,000,000 to $50,000,000. Of this issue $40,000,000 will be common and $10,000,000 preferred stock. Under the proposed plan the present $1,000,000 preferred stock probably will be redeemed at 110. A big stock dividend in the nature of an exchange of six or seven shares of new stock for one of old is looked for and it is expected that if a stock dividend is declared the common will be put upon a five per cent. basis.

The Firestone company has been enjoying an enormous business during the past year, as indicated by estimates made in July of the yearly earnings, showing a gross of $35,000,000 for the year or an increase of nearly 40 per cent. over a year ago.



Plant of the Homer Laughlin Engineers Corporation, Los Angeles, Cal., Manufacturer of the Laughlin Front Drive Automobile, an Eight-Cylinder Model in Which the Power Is Applied to the Front Instead of the Rear Wheels.

Harroun Motor Corp. Chartered.

First Harroun Car Completed and 10 Will Be Ready for New York and Chicago Shows.

The Harroun Motor Corporation has been incorporated under the laws of Delaware, with a capitalization of $10,000,000, to manufacture the car that has been in the process of development under the direction of Ray Harroun, the racing driver, for the past two years. The first of the Harroun cars, which will sell for $595, has been completed and 10 more will be ready for exhibition at the shows in January.

It is expected that the company will be manufacturing the cars in quantities sufficient to supply dealers by March, 1917, and according to present plans, will produce 25,000 cars between that time and May 1, 1918. The cars have a 107-inch wheelbase and the motor is a four-cylinder, valve-in-head type. A particular feature is in the method of construction, which will call for a large number of pressed steel parts. It is understood that a plant will be located in Michigan.

John Guy Monihan, formerly with the Premier Company, is president of the company. Ward Macy is to be sales manager and Paul Bruske will be in charge of the advertising.

LOZIER PLANT SOLD.

The plant of the Lozier Motor Company of Detroit has been sold to the Motor Products Corporation for approximately $750,000. The latter concern will continue to maintain its plant at Ann Arbor, which is conducted under the name of the Superior Manufacturing Company, but its main operations will be concentrated in the Lozier plant, the plants of the constituent companies, the Diamond, Rands, Vanguard and the Universal Metal companies having been disposed of.

FORD EMPLOYEES GET BONUS.

An "expression of good will," as it was termed by the directors of the Ford Motor Company, was given to the 1399 foremen and department heads of that company in the form of a bonus, totaling $850,000. This melon, which was in the past distributed at Christmas time, was given out Wednesday, Sept. 13, as a reward for service and results obtained throughout the year. Owing to the change in the fiscal year of the company from Oct. 31 to July 31, the bonus was divided earlier this year. The amounts of the individual bonuses ranged from $100 to $1000, and were distributed mostly among men in the main shops, only 100 in the main office participating and 231 in the branch offices.

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New Capital In Victor Motor.

New Company Incorporated with Capital of $2,000,000 and Factory Site Purchased.

The Victor Motor Company is planning the erection of a plant at Grubbs Ferry, Md., with facilities for the manufacture of 50,000 automobiles annually. This announcement was made with the purchase of a site of 12 acres, five of which will be used for the factory site and the other seven for the erection of office, buildings and homes for the employees. Ground will be broken at once. The site is located about four miles north of Wilmington on the Delaware river.

The Victor Motor Company, which was incorporated under the laws of Delaware on Aug. 16, with an authorized capital of $2,000,000, acquired the business of the Victor Car Company of Philadelphia, which has been building automobiles for a number of years.

It is understood that the new concern will manufacture a new model moderate priced car. The executive offices of the company will remain at 1530 Chestnut street, Philadelphia.

The officers of the company are: Charles B. Granfield, president; C. Victor Stahl, vice president; H. H. Skerrett, treasurer; Reginald Johnson, secretary. The board of officers, together with William H. Bischoff, will form the directorate.

100 PER CENT. DIVIDEND.

The Atlas Drop Forge Company of Lansing, Mich., declared dividends of 120 per cent. within the past month. The first dividend of 20 per cent., which was in cash, was followed by the declaration 10 days later of a stock dividend of 100 per cent. Two shifts of men are working at the plant and the concern's business is said to be running 100 per cent. over that at this time a year ago.

DE PALMA BUYS FACTORY.

Ralph De Palma and Frank Book, the latter of Detroit, recently organized the De Palma Manufacturing Company, to build racing automobiles in the city of Detroit, and have acquired a factory on East Woodbridge street, at a cost of $23,000. De Palma, who is a veteran racing driver, will supervise the construction of the product.

ACCESSORIES CATALOGUE.

The Williams Hardware Company, Clarksburg, W. Va., has issued a catalogue containing 114 pages of illustrations and descriptions of the large number of accessories they carry for the dealers' trade.

The Williams Company does a large business. Practically the entire line is illustrated and described in the catalogue, making it a valuable book for garage owners and accessory dealers, as it offers many new suggestions in the way of marketable goods.

KOEHLER ONE-TON TRUCK.

The H. J. Koehler Motors Corporation, Newark, N. J., has issued a large descriptive folder describing the Koehler one-ton truck chassis, which sells for $895. It also illustrates the power plant, radiator, the Torbensen internal gear drive rear axle and a birdseye view of the chassis, showing the accessibility of the various parts.

Willys-Overland Co. Expanding.

$5,000,000 Being Spent to Increase Facilities for an Annual Output of 300,000 Cars.

The Willys-Overland Company of Toledo, O., is expending $5,000,000 for construction and additional equipment to increase the productive capacity of the plant to 300,000 cars annually by the first of the year.

When these increased facilities have been installed and in operation it is understood that the concern's policy of expansion will have been consummated, and efforts of the management will be confined to reducing costs and increasing the efficiency of the organization.

The concern is now the second largest in the manufacture of automobiles in the world and when payment is made into the treasury for the 600,000 shares of common stock that was recently placed on the market the company will have over $20,000,000 cash on hand.

Ford Company Nets $59,994,118.

Financial Report Indicates Average Earnings of Approximately $1,000,000 a Week.

The Ford Motor Company, Detroit, Mich., made over $1,000,000 a week during the fiscal year ending July 31. The total profits were $59,994,118, and the year's gross business was $206,867,347. Cash on hand and in banks on July 31 totaled $52,530,771, as compared with available cash amounting to $6,400,100 at the end of the fiscal year in 1912.

The balance sheet compares as follows:

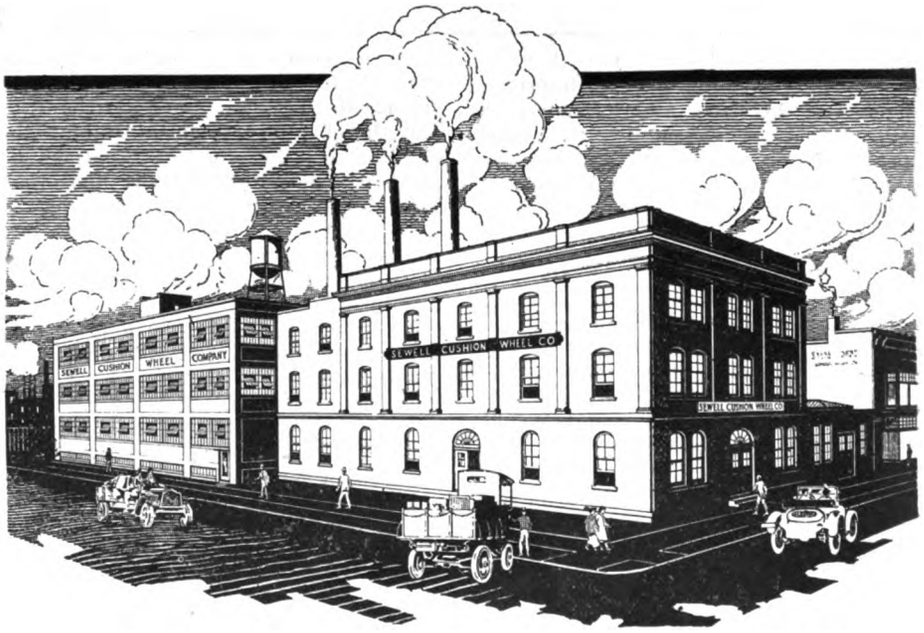
ASSETS.

	1916	1915
Cash on hand and in books	$52,550,772	$43,788,151
Mich. muni. bds. cost	1,259,029	1,311,924
Accounts receivable	8,292,778	2,300,456
Merchandise & sup.	31,895,432	14,335,768
Outside investment.	9,200	9,200
Expense inventories	434,055	385,378
Real estate	5,232,156	3,148,263
Bldgs. & fixtures	17,293,293	12,931,884
Mchy. & power plant	8,896,342	5,693,649
Tools	1,690,689	1,491,825
Patterns	170,620	142,998
Patents	64,339	61,473
Factory equipment.	3,868,261	2,606,356
Office equipment	431,249	328,497
Total	$132,008,220	$88,535,840

LIABILITIES.

Accounts payable	$7,680,866	$4,947,806
Contract deposits	1,519,296	1,968,845
Accrued pay rolls	847,954	428,907
Accrued salaries	338,269	841,814
Accrued expenses	1,175,071	463,111
Contract rebates	2,199,988	1,281,661
Buyers' P. S. rebates	48,099	15,000,000
Res. for fire insur.	57,494	51,262
Res. for plant depr.	4,200,275	2,936,452
Capital stock	2,000,000	2,000,000
Surplus	111,960,908	59,135,776
Total	$132,008,220	$88,535,840

There are now 49,870 men employed by the company and of this number 36,626 receive $5 a day or more in wages.



The New Three-Story and Basement Addition of the Sewell Cushion Wheel Company, Detroit, in Which Will Be Located the Executive Offices and the Wood Working, Machine and Assembling Departments. The Structure Is 71x74 Feet and of Reinforced Concrete.

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Automobile Situation in Brazil.

A Survey and Analysis of the Conditions in Brazil and the Possibilities of Trade for American Manufacturers of Cars and Accessories.

Alfred L. Moreau Gottschalk.*
U. S. Consul General, Rio de Janeiro.

FOR a number of months there has been shown in correspondence of Rio de Janeiro consulate general, as well as in the more frequent visits of salesmen and travelling representatives from the United States, a very pronounced interest in the Brazilian field for the sale of automobiles. The inquiries received here, both by letter and from travelling representatives, have been carefully noted and constitute what may be regarded as an interesting picture of the misconceptions that seem generally to prevail among North American automobile firms with regard to Brazil. The points are fully discussed below.

First of all, there are in the files of this office many letters that seek to ascertain what are the chances for an "automobile tour of South America" or a "tour through the interior of Brazil." To such inquiries the reply has had to be made in all cases that there is no international system of highways between the countries of South America; that the interior—at least the remoter interior—of most of the Latin American states is still devoid of communications other than trails or river ways; and that nobody has ever made—nor will probably for many years make—a tour such as is inquired about.

Motor Cars in Rio de Janeiro.

Visitors to Rio de Janeiro invariably comment on two things with regard to the motor cars which they see here in general use. One thing that arouses their attention is the prevalence of foreign (French, Italian, German) makes. The other is that the city's public taxicabs are almost all of them large and roomy and show evident signs of having been built for much more luxurious purposes than those to which put at present.

The explanation of the preference—for a decided preference does thus far exist—for foreign (European) makes in the matter of private cars is easily explainable from the fact that these southern countries have for years held the belief that while the United States produced and marketed foodstuffs and the grosser articles of prime necessity and sold them advantageously, none the less when anything in the nature of a luxury was to be purchased, one must naturally turn to Europe for it. To the average Brazilian an automobile is a luxury, and a luxury only.

Why Europe Leads.

The reasons why Europe enjoys this reputation of being the source par excellence of all things luxurious and "smart" is not hard to find. For years past Continental Europe has catered to the South American, not only commercially, but by welcoming him as a tourist; by helping him in a thousand ways to spend his money there; by flooding his own country with books, newspapers and illustrated magazines in languages that he could more readily understand than English; by establishing European schools in the South American countries and thereby unconsciously training the children to a more or less "Continental" ideal, which the child, being himself of Latin blood, readily enough assimilated; and, last but not least, by putting into business relations and selling methods that diplomatic suaveness that wins popularity.

As to the superior type of taxicab in evidence in the streets of Rio de Janeiro the explanation is simple, and not without some little hint of minor tragedy. During 1912—the "boom" year of coffee, when money was easily made and when business in general was prosperous as it had not been for many years previous—everyone who could afford it (and many, as the sequence shows, who could not) bought an automobile. Some were bought for cash, some on installments, and some on credit. A few were paid for before the crash came. All of them, one may say, were from Continental Europe. Then came the panic of 1913 and the financial stringency which the depression in business of that year and the closely following European war brought about. Private automobiles were a drug on the market. Many owners of cars were glad to send them out as taxicabs to earn what they could. Others sold them outright, at a sacrifice. And that is the simple reason why Rio de Janeiro has today the best looking taxicabs in the world.

The market for automobiles in South America generally is confined, first, to the cities, and, second, to the larger plantation areas. In the cities, as explained, the luxurious European car is preferred. It is only the planter in a few scattered agricultural districts who, like the North American farmer, has begun to know the motor car that is cheap and serviceable and regarded rather as a piece of farming equipment than as a pleasure vehicle. I am told that certain American makers of the lower priced cars have grasped this truth and have begun a campaign of education in this respect among the coffee planters of the State of Sao Paulo.

For the heavier vehicles, such as trucks and lorries, Brazil offers a less favorable field. The country, from the beginning of its settlement, stretched coastwise rather than toward the interior of the continent. To this day there are few roads penetrating the interior. Just as in the newer sections of the United States, the railroad came before the highway, and the highway, in consequence, is often bad.

Imports During Past Four Years.

The official record of Brazil's imports of automobiles graphically tells the story of the financial depression that has weighed down the republic for the past two years. In 1912 (the "boom" year already referred to) 3785 cars were imported, these having a value of $5,368,650; in 1913, 3218 were imported, their value being $4,684,069; but in 1914 the number dropped to 744 and the value to $968,994, and last year only 214 cars were brought in, whose aggregate value was $190,358. The United States furnished $924,045 of the imports in 1912 and $795,754 in 1913, and was third among the supplying countries in each of these years; but with only $165,152 to its credit in 1914 it held second place, and in 1915 ranked first, though its trade that year amounted to less than $123,500.

As regards number of cars, the United States was third in 1912, second in 1913, and first in both 1914 and 1915.

Brazil's Importation of Automobiles.*

	1912		1913		1914		1915	
Imported from—	No.	Value.	No.	Value.	No.	Value.	No.	Value.
United States	783	$924,045	814	$795,754	213	$165,152	169	$123,390
Germany	1,060	1,526,018	613	1,020,675	114	160,083	3	2,261
France	1,011	1,470,795	953	1,555,232	186	335,006	10	20,044
Italy	432	638,193	412	587,711	92	115,846	15	21,189
Great Britain	205	317,873	112	225,335	46	81,812	8	10,924
Belgium	120	186,216	83	133,222	35	50,265	..	.....
Switzerland	136	247,223	142	242,945	11	13,464	3	4,585
Other countries	38	58,287	89	123,195	47	47,366	6	7,965
Total	3,785	5,368,650	3,218	4,684,069	744	968,994	214	190,358

*In "Commerce Reports," Bureau of Foreign and Domestic Commerce.

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Distribution of Motor Cars Throughout Brazil.

I have tried in vain to obtain statistics of the number of cars in use or licensed in the various large cities of Brazil. An idea of the relative importance of the various districts of the country to the foreign maker of motor cars may, however, be gathered from the following table, which shows the number of cars imported through the various ports of entry of the Republic between 1912 and 1915:

Ports	1912	1913	1914	1915
Manaos	29	24	5	..
Para	61	58	14	..
Maranhao	43	19	4	1
Ceara	36	11	4	..
Natal	1	1	..	..
Pernambuco	66	54	43	4
Maceio	3	18	2	1
Bahia	55	111	19	8
Rio de Janeiro	2,117	1,345	198	24
Santos	1,121	1,318	325	166
Paranagua	21	31	10	1
Sao Francisco	..	..	3	..
Florianopolis	2	3	3	2
Rio Grande do Norte	12	14	2	1
Pelotas	30	45	25	4
Porto Alegre	151	87	37	2
Livramento	6	24	10	..
Quarahy	2	3	3	..
Uruguayana	17	36	26	..
Itaqui	2	3	..	..
Jaguarao	4	..	..	..
Corumba	..	..	2	..
Porto Velho	6	6	..	..
Itapoby	..	2	2	..
Rio Grande do Sul	..	5	..	..
Sao Borja	..	..	2	..
Total	3,785	3,218	744	214

It will be seen that, under the more normal conditions of 1912, Rio de Janeiro, the great distributing point of the republic, headed the list. Since then the financial depression has greatly lowered the country's purchasing power as a whole, and only Santos, the port of the State of Sao Paulo (which is today the principal seat of the coffee industry) has been buying automobiles—chiefly for the reason that the planter there has learned to appreciate the motor car not as an article de luxe, but properly as part of his farming equipment.

Choosing a Field—Competition After the War.

A mistake that many North American travelling salesmen make, however, when they visit Brazil, is to be misled by prosperous conditions in the State of Sao Paulo, and to conclude that there lies the only field for the sale of automobiles. It is true that many motor cars have been sold there and that many more will be disposed of among the coffee planters, but I am almost convinced that the firm which has confined its efforts to the Sao Paulo country will find, in the end, that it has not done wisely. Far better would it be, to my mind, to establish lasting connections with some good selling agent at the natural distributing point, Rio de Janeiro, and let that agent sell wherever changing conditions might later warrant.

The figures given above should not encourage the American investigator of this market to think, because during the past year the United States has furnished 65 per cent. of the automobiles purchased by Brazil, that that country will necessarily retain this position once the nations of Europe have reorganized their exporting. The two obstacles that will have to be faced will be those enumerated in the beginning of this report, namely, the Brazilian tendency to prefer European styles, and the superior skill and more lenient terms of European competitors in marketing their goods.

Cars in the Federal District.

The federal district—which, like the District of Columbia, is the government preserve surrounding the capital city, Rio de Janeiro—had at the close of 1915 a total of 2347 automobiles registered. The fees collected for these registrations during that year aggregated $72,869 (American currency). The figures given are, however, considerably underestimated, for they do not include the numerous motor cars employed in the service of both the municipal government of Rio de Janeiro and the federal government itself, which are exempt from registration. These are said in all to amount to several hundred cars. The kinds and numbers of cars licensed and registered in the federal district during 1915 were:

Private automobiles for two persons	174
Private automobiles for four persons	424
Private automobiles for six persons	85
Taxicabs for two persons	16
Taxicabs for four persons	601
Taxicabs for six persons	696
Auto omnibuses (now out of commission)	23
Private motor trucks	193
Motor trucks (rentable)	40
Automobiles for transporting meat	12
Automobiles for trials	10
Owned by the Rio de Janeiro Tramway Light and Power Co. (not taxed)	73
Total registered	2,347

Since Jan. 1, 1916, the operation of a system of auto 'buses, which carried passengers from the centre of the city to various points as far as five miles in certain residential sections, has been discontinued. The fares were very reasonable (from five to 15 cents), but the company claimed that with the high price of gasoline which prevailed (43 cents a gallon on Dec. 25, 1915, and since risen to 52 cents a gallon, as against 25 cents on July 31, 1914) the service could not be continued without heavy financial losses. An unsuccessful attempt to electrify this line was made, but this having failed there are today no indications as to when the service may be resumed, and in the meantime the 'buses are lying idle.

Low Priced Automobiles—Cars Should Be Fully Equipped.

A tendency toward the purchase of the smaller and more modest cars is plainly discernible in Brazil today. Four years ago a "runabout" on the streets of Rio de Janeiro was a curiosity. Now, as the table illustrates, there are already a considerable number of the smaller cars, which are gradually replacing the larger, more expensive ones. It is in this field that the American car may find an opportunity; and I cannot impress it too strongly upon such automobile firms as call upon me for information that for Brazil—and, I think, perhaps for Latin America generally—they should concentrate their efforts on selling a good, practical small car that would be within reach of most men's purses.

I have heard considerable complaint that certain low priced American cars sold here were not provided with speedometers, and that it seemed as if the makers inferred that these necessary adjuncts could be purchased easily at any time. No greater mistake could be made than this, and no American car should ever be offered here that is not fully provided with all its necessary accessories.

The question was asked me not long ago, by an American travelling representative who called at the consulate general, whether he ought not to advise his firm to establish its depot for accessories and its work shop for assembling cars at some point other than Rio de Janeiro, selecting rather some city whose topographical surroundings were level, whose roads were numerous and well kept, and whose general interests were agricultural. The question was a very natural one, and yet, somewhat to my visitor's surprise, I had to answer it decidedly in the negative. It is on just this point that so many American firms desirous of establishing a branch or agency in Brazil often make their initial error.

Government Enjoys Customs Income.

It should be remembered that Brazil is an assemblage of 21 states, each of which has a remarkable degree of autonomy, and that the capital city, Rio de Janeiro, is situated in a federal district that, like the District of Columbia, belongs to no one of the several states, but is under the immediate jurisdiction of Congress and of a sort of municipality. As articles seven and nine of the Brazilian constitution provide, the federal government levies and enjoys the income from customs and other duties upon all imports. The duties which may be levied and collected upon all exports, however, are the property of the individual state where the factory is located; and each of the states has its own tariff of export charges and may vary them at its pleasure. It is this peculiarity in Brazilian law, joined to an utter absence of interstate laws concerning commerce, that makes it infinitely more profitable for a foreign corporation or manufacturer to settle within the federal district, which, outside of the usual charge for trading license, levies no duties upon production or exportation either to foreign countries or to any of the Brazilian states.

The city of Rio de Janeiro enjoys practically a monopoly of the distribution of merchandise throughout Brazil. This distribution is effected chiefly by means of a government owned railway, the Central Railway of Brazil, which penetrates from Rio de Janeiro into the interior, and by the coastwise steamers of the Lloyd-Brasileiro Steamship line, also a government owned transportation company, with a river service, a coastwise service and ships running to the United States out of Rio de Janeiro.

The city of Rio de Janeiro, further, is visited yearly by thousands of merchants from all the various states of the Brazil-

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ian union. One comes here to make one's arrangements for purchasing stock throughout the year; one brings one's wife and daughter here to see the newest fashions and make their purchases of the latest modes imported from abroad; or one comes to consult some well known lawyer on a business matter of interstate importance. In this sense Rio de Janeiro is perhaps not only the political, but the commercial, legal and social capital of the whole country.

Salesmen's Operating Licenses—Sample Cars.

The American salesman who comes here with a car whose merits he is prepared to demonstrate asks, first of all, for an operating license. He is naturally inclined to think that this is due him as a right. Unfortunately, the local law makes no provision for temporary operating licenses, and what he considers as no more than his due must be asked for, as a "special privilege to a foreign firm," by the consulate general. Brazil does not have two forms of licenses, one for the owner or demonstrator of a car, and another for the professional chauffeur; nor is an applicant immediately granted an operator's license without examination.

Once he has obtained a special license the salesman must be prepared to show it on all occasions, and perhaps to submit to a little curious inquiry of a purely personal nature on the part of some good natured policeman with a thirst for knowledge as to the enterprising methods of foreign firms. The license is not based upon the horsepower of the car, and it is not valid after one has crossed a state boundary. It is to be hoped that within a short time certain ordinances may be passed in Brazil which may alleviate most of these difficulties.

There is no class of salesmen who should more carefully remember the requirement of the Brazilian customs laws regarding samples than automobile salesmen. A salesman who has with him cars for demonstrating purposes should remember that he cannot have them enter the country in bond without, before his departure from the United States, obtaining a Brazilian consular invoice declaring them to be samples.

HAPPENINGS AMONG THE MANUFACTURERS.

The Herschell-Spillman Company, Tonawanda, N. Y., manufacturer of motors, is adding a large addition to its plant. The building is of concrete construction and is equipped throughout with safety and labor saving devices.

The Metal Auto Parts Company of Indianapolis, Ind., has purchased three and one-half acres at Chase and Henry streets, where the company plans to erect two large brick buildings to be used as a factory. The cost of the land and buildings will be about $68,000.

The Harvey Spring and Forging Company, Racine Junction, Wis., has broken ground for a new fireproof building, 100 by 200 feet. It will be used exclusively for forming and heat treating automobile springs. This addition was necessary on account of the growing demand for the company's boltless type of spring.

The Hartford Auto Parts Company of Hartford, Conn., will be known henceforth as the Connecticut Auto Parts Company, the decision to change the name having been reached at a recent meeting of the stockholders.

The Sewell Cushion Wheel Company, Detroit, is enlarging its factory by erecting an addition 71 by 74 feet. The new building will adjoin the present property on Gratiot avenue, and will be of reinforced concrete, three stories high. It will quadruple the factory space. The sales have increased 100 per cent. and the new plant will enable the company to expand its output still further.

The Chalmers Motor Company, Detroit, will open a school of salesmanship. Classes will be conducted three evenings a week. School will be opened only to selected men from the factory, but eventually it is expected to allow outside pupils to take the course.

The Kent Motors Corporation, New York, N. Y., export agent for the Elcar and Marion, has moved into new offices at 1790 Broadway. It was formerly located at 1704 Broadway.

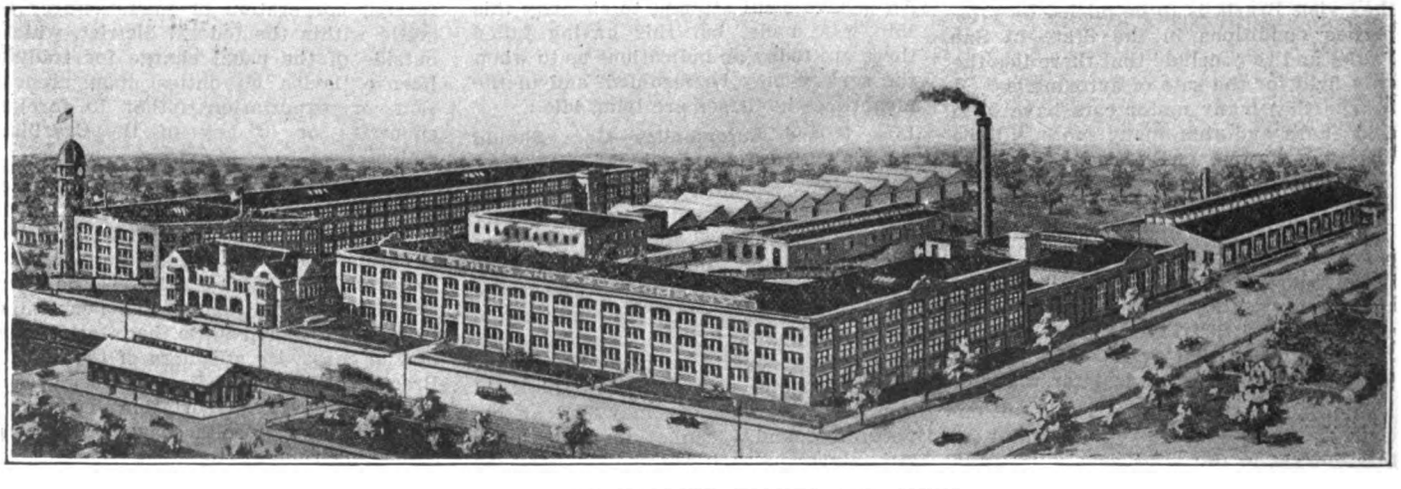
The Chase Motor Truck Company of Syracuse, N. Y., has a new motor truck which will sell at $2800. It will be called **Model "X."** It is three-ton, worm driven vehicle, equipped with driver's cab at the list price. The Chase line now comprises five different sizes of trucks, of ¾, 1, 1½, 3 and 3½ tons capacity.

The Barley Manufacturing Company, Streator, Ill., has decided to paint all of the cars manufactured in the future in accordance with the wishes of the buyers. A list of color combinations has been prepared, which is submitted to patrons, and the tinting is completed as preferred. Orders have been secured beyond the capacity of the plant to fill.

The Vail-Rentschler Tractor Company, Hamilton, O., has been organized with an authorized capital of $100,000 to build and market a medium weight tractor which will operate by gasoline or kerosene. The incorporators are: G. A. Rentschler, C. B. Wing, J. A. Vail, Gordon S. Rentschler, Samuel C. Vail. The plant is now being equipped.

The Perkins Campbell Company, Cincinnati, O., has added 10,000 square feet to its factory to take care of the demand for seat covers, tire covers, engine and radiator hoods, tool rolls and other fabric lines. A second building with over 8500 square feet is being added.

The Briggs & Stratton Company, Milwaukee, Wis., one of the largest manufacturers of ignition and motor car specialties in the Middle West, has started work on a new plant to cost $100,000. The main building will be five stories high, 60 by 220 feet, of fireproof construction.



HOME OF THE HOLLIER EIGHTS AND SIXES.

The Large and Modern Plant of the Lewis Spring and Axle Company at Chelsea, Mich., Wherein Are Manufactured the Hollier Eight and Hollier Six Automobiles.

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The Covert Motor Vehicle Company, Lockport, N. Y., was recently reincorporated as the Covert Gear Company and its capital stock was increased to $1,000,000. It is erecting an additional factory building at a cost of over $50,000, and upon its completion will use it for the manufacture of transmissions.

The Greenlease Motor Car Company, Kansas City, Mo., is making preparations toward the erection of a building at the intersection of Gillham road and McGee road, which will cover 28,500 square feet and will cost $135,000. The building will be the new home of Cadillac cars and the Greenlease service station.

The Hester Tire and Rubber Company has purchased a factory site at Lima, O., on which it will erect a main structure, 60 by 150 feet, and a power house 60 by 60 feet. Machinery will be installed and active manufacturing is to commence early in the fall. The estimated capacity of plant at the beginning will be 100 tires a day, and an initial force of 100 men will be employed.

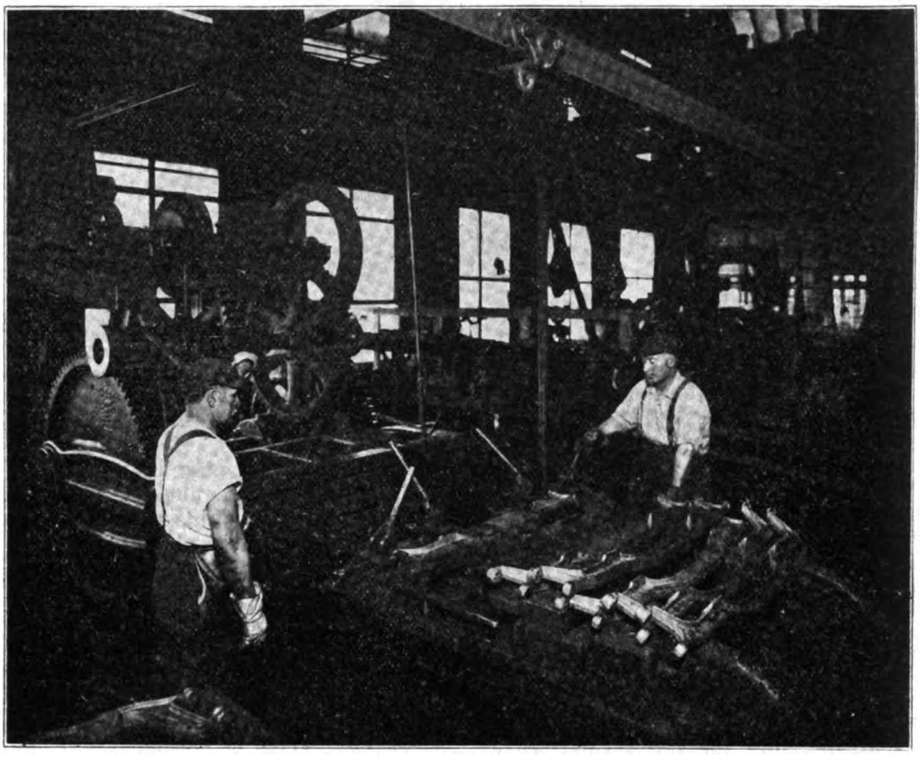
The Sterns Tire and Tube Company, Wellston, Mo., has started work on a new plant in which "Sternwear" tires and tubes will be made. The inner tube is of special construction, and is claimed to be proof against puncture and blow out. The company is headed by Edward Stearns.

The Mutual Motors Company, manufacturers of the "Marion-Handley" Six, has purchased the big plant of the Imperial Automobile Company at Jackson, Mich. J. I. Handley is president of the Mutual company. With this addition the company will have the facilities and room for a production of 100 cars a day. The present buildings are substantially constructed of brick and are 900 feet long and 440 feet wide, and the plot of land included in the purchase is about 17 acres.

The Goodyear Tire and Rubber Company, Akron, O., is erecting a battery of five cooling towers, the first to be installed by any of the large rubber companies of the country. The cooling battery is being installed in five sections, each equipped with a 12-foot rotary fan. These create a current of cold air through which the overheated water coming from the turbine may splash and re-enter the turbine at the proper temperature. In this manner 12,500 gallons of water may be cooled each minute and used over again indefinitely. It is estimated that in a year the water wastage will amount to less than five per cent.

The Mitchell Wagon Company, Racine, Wis., manufacturer of automobile bodies, is enlarging its operating departments to bring the output up to the mark required by its contracts, the principal one being with the Mitchell Motors Company. The output of the Mitchell is being increased by the unusual demand upon the body makers.

The Waukesha Motor Company, Waukesha, Wis., is having plans prepared for a new administration building to be of fireproof construction, 36 by 132 feet in size, two stories and basement. The completion of the new offices will release considerable floor space for manufacturing purposes. This was made necessary on account of the great rush of orders.



THE "BULLDOZER" OF THE JEFFERY PLANT.

This Big Machine, Called the "Bulldozer," by the Workmen in the Nash Motors Forge Shop, Fixes the Length of Jeffery Front Axles at the Rate of One a Minute, Achieving a Saving of 66 Per Cent. Over the Old Hand Method.

The Guide Motor Lamp Company, 114th and Madison streets, Cleveland, O., is building a one-story brick addition to the present building at a cost of about $11,000.

The Armstrong Rubber Company, Newark, N. J., is equipping its factory for the manufacture of the Armstrong red inner tube equipped with the Kahn valve. The company manufactures specialties for the trade and also tubes under special brands.

The Elkhart Carriage and Motor Car Company, Elkhart, Ind., has announced its 1917 Elcar model, selling at $795. There are two body types, the clover leaf roadster, seating four passengers, and a five-passenger touring car. The specifications include a 3½x5 unit power plant, three-point suspension, 114-inch wheelbase, full floating rear axle, Delco ignition, Turkish style upholstering.

The United States Tire Company sold during the first six months of 1916 more truck tires than during the whole year of 1915. The truck tire department of the company is under the management of C. J. Welch.

The New Process Gear Corporation, Syracuse, N. Y., has acquired an interest in the Frazer & Jones Company, manufacturers of harness hardware. Frazer & Jones is an old established concern, manufacturing a staple brand of harness goods, and has recently completed a new plant. T. G. Meachem, vice president of the gear corporation, has been elected a director.

The United States Motor Truck Company, Cincinnati, O., has increased its capital stock from $300,000 to $1,000,000. This was made necessary to take care of the rapidly growing business. R. C. Stewart is president of the company.

The Kissel Motor Car Company, Hartford, Wis., will have more than 60,000 square feet of floor space added during 1916. Two additional buildings are in the course of construction at the plant and other additions are under consideration.

The Cutler-Hammer Manufacturing Company, Milwaukee, Wis., has issued a folder stating that 750 cities have dealers selling C-H magnetic gear shifts and general reasons for handling the device. Sent to dealers by request.

The Layman-Lowry Motor Car Company, New York, N. Y., has incorporated with a capital of $5000. They will manufacture a novel design of motor car to sell at $8000, this price being to the chassis alone. The incorporators are: M. C. Mayer, Winthrop S. Horton and George B. Rubenstein. Two features of the car are a new type axle and a transmission made up of only five parts, which the inventor claims will entirely eliminate the possibility of clashing gears.

The Philadelphia Storage Battery Company, Philadelphia, Penn., has recently opened offices in Detroit, Atlanta and Los Angeles. The Detroit office is in charge of Peter Kain, located at 1107 Kresge building. D. J. Mackillop is in charge of the Atlanta office and C. L. McWhorter in charge of the Los Angeles office, located at 1105-7 West Pico street.

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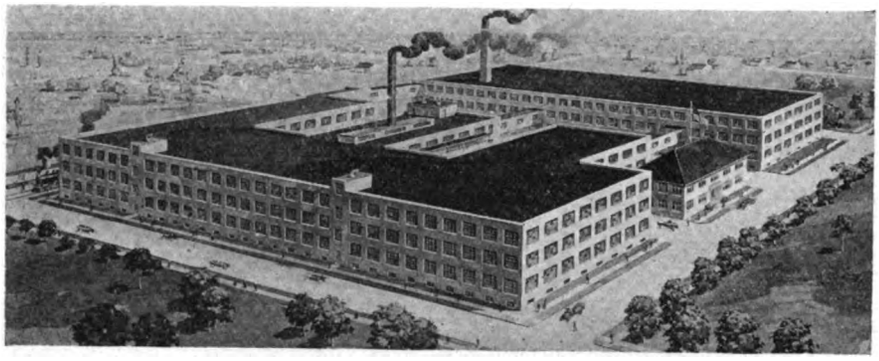

How the Plant of the Covert Gear Company, Lockport, N. Y., Will Look When the New Additions Have Been Completed—This Company Was Recently Reincorporated with Capital of $1,000,000, and Its Product Is Unit and Centre Hung Transmissions for Motor Cars.

The Paige-Detroit Motor Car Company, Detroit, Mich., shipped more than $2,000,000 worth of cars during the month of August. This was the best month of the year for the Paige company; it surpassed in volume of business the record of any other month in the entire history of the company.

The U. S. Light and Heat Corporation, Niagara Falls, N. Y., at the annual meeting of the stockholders elected the following directors for the ensuing year: Egbert H. Gold, J. Allan Smith, A. H. Ackerman, Chauncey L. Lane, Ralph C. Caples, Henry W. Farnum, James A. Roberts, Conrad Hubert, George G. Sheperd, Keene H. Addington, Edwin K. Gordon.

The Burd High Compression Ring Company, Rockford, Ill., has issued a directory of piston ring sizes, which includes a tabulation of the piston ring requirements of practically every automobile of any import manufactured in this country during the past 10 years, and also information covering the requirements of aeronautical, marine, stationary and other types of internal combustion engines. The book is an invaluable source of information for garage men and those engaged in the repair of gasoline engines and contains data on proper fitting and installation of piston rings. This directory is distributed among the garage trade free of charge.

The National Motor Vehicle Company, Indianapolis, Ind., has started work on its new $150,000 addition to the factory. Two new buildings are to be built at once. The company now occupies an entire city block and in order to make the increase desired it was necessary to cross Yandees street. One of the buildings will be 380 feet long by 60 feet wide and three stories high and will be of reinforced concrete and steel of the same general design and construction. The other will be 328 feet long by 140 feet wide and one-story high. More than 114,000 square feet of floor space will be added to the factory.

The Lee Tire and Rubber Company has placed a contract with John W. Ferguson Company of New York and Paterson, N. J., for another building at their Conshohocken plant. On the general floor of this building will be installed the necessary large dipping tanks used in the manufacture of rubber gloves, the object being to take this part of the industry out of the main plant and provide considerable additional space for the manufacturing of tires. The building measures 80 by 120 feet in plan and will for the present contain but two stories.

The Rub-On Manufacturing Company, Inc., Buffalo, N. Y., has changed its name to the Ellis-Smith Manufacturing Company, Inc. The management and the sales policy will remain as before. This change is made owing to the fact that the name no longer applies to the products now manufactured, which consist of auto turntable jacks, towing trucks and valve reseating tools.

The H. F. Schiver Manufacturing Company, Detroit, Mich., has sold the Scott patents and all assets and good will in connection with the Scott hose clamp to the Bartlett Manufacturing Company, 40 East Lafayette avenue.

The Torbensen Gear and Axle Company has changed its name to the Torbensen Axle Company. Property was purchased some months ago and the new Torbensen plant is nearing completion. New and modern machinery is being installed and this will greatly increase the production of Torbensen drive axles.

The Briscoe Motor Corporation, Jackson, Mich., has organized a fire department and the several buildings of the department have been divided into fire zones. The zones are numbered consecutively and each is equipped with a certain number of fire fighting apparatuses, such as chemical extinguishers, sand pails, stand pipes and hose, where water connections are available. The firemen in each zone constitute a "brigade," each being officered by a "brigade captain" and an assistant. The several "brigades" are directed by a fire chief and an assistant chief.

The Hartford Machine Screw Company, Hartford, Conn., manufacturers of Master Calorite spark plugs, has been given a contract for filling the spark plug requirements of the United States postal service for the ensuing fiscal year with Master Calorite plugs. Government specifications demand the very best and this contract is high testimony for the Hartford company's plugs.

The Springfield Body Company, Springfield, Mass., has experienced an increase of 1000 per cent. in orders for their product during the past 12 months. The concern is now furnishing bodies as standard equipment to the following companies: Abbott-Detroit, Cadillac, Cole, Davis, Haynes, Inter-State, Marmon, Mitchell, Oldsmobile, Overland, Paige-Detroit, H-A-L, Reo, Stearns, Studebaker, Velie, Westcott and Winton.

The New Service Station of the General Vehicle Company, 592 Commonwealth Avenue, Boston, Mass., Which Contains About 15,000 Square Feet of Floor Space, and Is Said to Be One of Finest Equipped in the Country.

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AGENCIES RECENTLY APPOINTED.

Add to and Correct Your Mailing List—Symbol * Indicates Commercial Vehicle, † Electric, and ‡ Light Car.

CALIFORNIA.

Fresno—*Croce, A. W. Sloan.
Los Angeles—Liberty, Pacific Motor Car Corporation.
Partin-Palmer, J. B. de Long, 1042 South Olive street.
Oxnard—Maxwell, Robert Green, Sixth and B streets.
Sacramento—Studebaker, J. J. Jacobs and R. C. Bridge.

COLORADO.

Denver—Locomobile, The Chamberlain Woods Motor Sales Co.
New Castle—Grant, Beard & Thompson.

CONNECTICUT.

Hartford—Buick, The Bristol Auto Sales Corporation.
Ford, The Bristol Auto Sales Corporation.
Locomobile, The Locomobile Sales Co., 10 Ford street.
Meriden—Ford, Fred A. Gregory.
Overland, Glock-Gracey Company (Blue Ribbon Garage).
New Haven—Apperson, B. O. Prentiss.
Interstate, B. O. Prentiss.
*Vim, The Walter F. Kelley Co.

FLORIDA.

Tampa—Chandler, Overland Tampa Co.
Saxon, Overland Tampa Co.

ILLINOIS.

Chicago—Ford, Glenn E. Holmes.
Jordan, The Chicago Motor Car Co., Inc.
East St. Louis—Mitchell, The Byerly Auto Co.
Oldsmobile, The Byerly Auto Co.
Oak Park—Allen, The Universal Auto Station, 29 Madison st.
Ottawa—King, Ottawa Garage.
Port Byron—Drexel, James Amidon, Jr.
Sullivan—King, D. W. Shipman.
Tremont—King, D. A. Stormer.

INDIANA.

Brazil—Overland, Charles D. Johnson.
Willys-Knight, Charles D. Johnson.
South Bend—Monroe, Kirby Brothers.

IOWA.

Cedar Rapids—King, O. L. Colton.
Council Bluffs—King, L. P. Madison Auto Co.
Davenport—Ford, Horst & Streter Co.
Ford, Fred Barr.
Denison—King, J. B. Rosans & Co.
Des Moines—Franklin, Holsman Stevens Co.
Grant—King, L. C. Schuler.
Keokuk—King, The Ayres Mfg. Co.
Sioux City—Liberty, William Warnock.

KANSAS.

Coffeyville—Overland, Hahn Brothers.
Cottonwood Falls—Buick, Dr. W. V. Neighbors.
Hutchinson—Marion, The Oliphant Motor Co.
Mitchell, The Eaton Auto Co.
Wichita—Saxon, The Williams Motor Car Co., 131 North Lawrence avenue.

KENTUCKY.

Danville—King, J. H. Wolf.
Emporia—Marion-Handley, J. W. Gilbert.
Louisville—*Garford, Hodapp & Miller.
Russell—Willys-Overland, A. J. Missimer.
Vermillion—Overland, William Burdett & Son.

LOUISIANA.

New Orleans—Liberty, Abbott Automobile Co.
Saxon, H. L. Stotz.
Shreveport—Chalmers, The Campbell Chalmers Co.

MAINE.

Portland—Saxon, Charles S. Lord.

MARYLAND.

Baltimore—Grant, The Wilson Motor Co., Inc.
Liberty, The Wilson Motor Co., Inc.

MASSACHUSETTS.

Boston—Abbott-Detroit, J. J. McCarthy, Commonwealth ave.
Ford, Snow, Combs & McBeath, Inc., 885 Boylston street.
Ross, J. J. McCarthy.
Cambridge—Ford, The Cambridge Motor Co.
Lowell—Chandler Six, The Lowell Motor Mart.
Ford, the Pitts Auto Supply Co.
Lynn—Dodge Brothers, The Henshaw Motor Co.
Stearns-Knight, C. F. Green & Sons.
N. Chelmsford—King, Moore Motor Repair Co.
Springfield—Autocar, The Stoddard Motor Car Co.
Worcester—Ford, F. C. Dole.

MICHIGAN.

Battle Creek—Elgin, The Rivers & Norton Garage.
Bay City—Abbott-Detroit, The Abbott Auto Sales Co.
Bismarck—Mitchell, The Capital Motor Co.
Saxon, The Capital Motor Co.
Detroit—Grant, Gordon Auto Sales Co.
Liberty, The Strasburg Miller Co., 972 Woodward ave.
Grand Rapids—Chandler, Chandler Motor Sales Co.
Maxwell, West Michigan Oakland Co.
Houghton—Buick, James McClure.
Jackson—Saxon, Weinbeck Auto Sales Co., Orpheum Garage, 12 West Pearl street.
Kalamazoo—Sun, The Sun Auto Sales Co.
Lansing—King, Henz-Truxell Auto Sales Co.
Manistee—Mitchell, A. Kann & Co.
Marquette—Woods Mobilette, M. Walin.
Nashville—Saxon, The Nashville Overland Auto Co., McLaughlin building.
Portland—Maxwell, M. S. Braum.

MINNESOTA.

Clarissa—Chevrolet, The Simon Garage.
Minneapolis—Stephens, A. F. Chase Sons Co., 904 Hennepin avenue.
Olivia—Dodge Brothers, Melhause & Heins.
Hudson, Melhause & Heins.
St. Paul—*Republic, Northern Motor Car Co., 344 Exchange st.
Winona—Reo, Winona Motor Co.

MISSOURI.

Dexter—Oldsmobile, J. Ross Holcomb.
Kansas City—National, Donald D. Davis Motor Car Co.
Scripps Booth, Donald D. Davis Motor Car Co.
*F. W. D., Victor L. Phillips.
Marceline—Allen, Beetler & Gray.
Meriden—Case, The Cullpepper Motor Co.
Pullman, The Cullpepper Motor Co.
Studebaker, The Cullpepper Motor Co.
Nevada—Overland, J. W. Buchanan.
St. Louis—Ford, J. T. Ayers & S. Breadon.
Hollier, The Motor Instruction and Engineering Co.
Trenton—Buick, Hyde & Bone.

NEBRASKA.

Humboldt—Hupmobile, R. Powers & Ben Philpot.
Janesville—King, Janesville Auto Co.
Mead—King, E. Turner.
Scottsbluff—King, City Garage.

NEW HAMPSHIRE.

Concord—Saxon, Hall Brothers-Llewelyn Co., 1178 Elm street.

NEW JERSEY.

Mt. Lake—King, J. F. Sherbino, Mountain Lake Garage.
Plainfield—King, O. A. R. Garage.
Trenton—King, Charles R. Sweet, 107 South Warren street.

NEW YORK.

Brooklyn—The Windsor Auto & Service Corp., 1410 Bedford avenue.
Buffalo—Jordan, Decrow Motor Sales Corp.
New York—Jordan, John G. Dale, 240 West 59th street.
*D. E., The Gram Co., Inc.
*Sullivan, The Mitchell White Co.
Plattsburg—King, H. J. Morse, 33 Charlotte st.
Troy—King, East Side Garage, 110 Pinewoods.

NORTH DAKOTA.

Bismarck—Madison, Western Sales Co.
Grand Forks—Dodge Brothers, The McKinney-Fuller Motor Co.
Minot—Maxwell, Stice & Jensen.

OHIO.

Cincinnati—King, Norman Reson, Eighth and Syramore streets.
Cleveland—Apperson, The Hamelton Motor Car Co., 2336 Euclid avenue.
Ford, The Fen Far Co., 2165 East Ninth street.
Ford, The Craig Auto Co., Chester Annex, East 20th street.
Columbus—Cadillac, Columbus Cadillac Co.
Ford, The N. T. Foster Garage, High and Norwich streets.
Ford, Frank H. Lawrell and Murray M. McLeisch, 241 North Fourth street.
Liberty, Central West Motor Car Co.
Maxwell, Columbus Cadillac Co.
Regal, The Shisler-Bidlack Auto Sales Co.
Norwalk—Abbott-Detroit, C. S. Beatman.
Toledo—Garford, The Garford Motor Truck Co.
Liberty, The Cornelius-Browning Auto Co.
Sandusky—Apperson, The Kappins Auto Sales Co.
Buick, The Sandusky Buick Co.

OKLAHOMA.

Oklahoma City—Ford, G. W. Pope and L. A. Pangle.

PENNSYLVANIA.

Philadelphia—*Signal, The Lee T. Ward, 928 Commercial Trust building.

SOUTH DAKOTA.

Sioux Falls—Liberty, Williams Warnock.

TENNESSEE.

Chattanooga—Buick, Hardwick-Buick Co., Market street.
Memphis—Ford, Frank N. Graham and J. T. Merrin, Jr., 181 Madison avenue.

TEXAS.

Cleburne—Chevrolet, Kennard Barnhill Motor Co.
Dallas—Ford, Newton G. Flipper, Cedar Springs avenue, N. Pearl street.
Ford, J. H. Shelton, 2223 Commerce street.
Hupmobile, The Burton Rountree Co.
Inter-State, The Burton Rountree Co.
Jackson, The Burton Rountree Co.
Oldsmobile, The S. G. Davis Motor Car Co.
Ogden—King, Ogden King Eight Auto Co., Eccels building.

WASHINGTON.

Ephrata—Oldsmobile, Nelson Garage and L. C. Lauzier.
Spokane—Grant, Hodgins Motor Co.
King, Snyder Motor Car Co.
Sunnyside—King, Sunnyside Garage.
Tacoma—Abbott-Detroit, Farnsworth Foulker Auto Co.
King, L. Schable.
Moon, G. A. Sabourin.
*Gramm-Bernstein, N. F. Rae, 2135 Jefferson avenue.

WISCONSIN.

Milwaukee—Ford, Holmes & Co., 495 Broadway.
Jordan, Motor Car Sales Co., 525 Jefferson avenue.
Lexington, R. D. Rockstead, 148-152 Seventh street.
Stephens, The Wait Auto Co., 789 32nd street.
*Gramm-Bernstein, J. A. Devory.
Watertown—Dodge Brothers, J. Detert and Arnold Pankow, 111 Fifth street.

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NATIONAL TRADE INFORMATION EXCHANGE.

Opportunities for Car and Accessory Manufacturers, Jobbers and Dealers which Have Been Reported from All Parts of the United States During the Past Month.

ACCESSORIES AND EQUIPMENT.

New Britain, Conn.; A. M. Paonessa, 174 Nemont street, would like to secure air compressors, air pumps, anti-rattlers, anvils, autogenous welding equipment, batteries, bearings, belts, caps, drills, gasoline, greases, meters, measuring instruments, nuts, oils, odometers, shock absorbers, speedometers, storage systems, tanks, testers, tires, tire accessories, tools, turntables, vises, voltmeters, vulcanizers, waste, wrenches and turntable for garage.

San Diego, Cal.; Conniry & Shank is interested in oils and greases.

Chicago, Ill.; H. P. Kroencke, 3238 Beach avenue, is in the market for washers for washing autos.

Woodstock, Ill.; E. R. Goodrow & Son is desirous of securing air pumps, batteries, bodies, bulbs, chains, charging apparatus, dimmers, fenders, furnaces, headlights, heaters, horns, jacks, lamps, lathes, lubricators, maps, packing, patches, polishes, racks, searchlights, seats, soaps, speedometers, storage systems, tire accessories, tires, tops and parts, transmissions, trimmings, vulcanizers and wash stands.

Decorah, Ia.; John McCall is anxious to secure air compressors, anti-rattlers, autogenous welding equipment, bolts, cabinets, (Ford) carburetors, charging apparatus, locks, nuts, (Ford oversize) pistons, reamers, timers, valves and washers. The goods are to be used for Ford cars.

Franklin, Mass.; The Abbott Garage is interested in air compressors and air pumps.

Lowell, Mass.; Pitts Motor Sales is in the market for recording time clocks and special bodies for commercial cars. The goods are to be used for Fords.

Malden, Mass.; E. T. Hazen, 706 Salem street, wants air compressors and dynamos.

King City, Mo.; Beals-Walton Auto Company wishes to secure fire extinguishers, lathes, recording time clocks and tools.

St. Louis, Mo.; William D. Walsh (Walsh Motor Car Company) is interested in mechanical starters, speedometers and starters.

Trenton, N. J.; Para company wants air pumps, cements, chains, gauges (tire), patches, tire accessories, vulcanizers. The company wants everything pertaining to the tire business only.

Brooklyn, N. Y.; Peter Linbloom, 946 East 14th street, wants air compressors, batteries, bearings, carburetors, cements, chains, drills, dynamos, horns, hose, jacks, magnetos, motors, oils, plugs, pumps, recording time clocks, rubber, screws, tire accessories, tools, trimmings, vulcanizers and washers.

New York, N. Y.; Wylie Carey, 7 East 42nd street, is in the market for air compressors, air pumps, arbor presses, batteries, bearings, bodies, bolts, brakes, brushes, bulbs, bumpers, burners, cabinets, cable, carburetors, castings, cements, chains, charging apparatus, clamps, clips, clutches, coils, collars, commutators, controllers, couplings, cranes, cylinder machines, cylinders, dashes, dimmers, discs, doors, drills, drums, dynamos, elevators, engines, fans, fasteners, fenders, fire extinguishers, forgings, frames, gaskets, gasoline, gauges, generators, greases, grinders, guards, guns, hammers, headlights, heaters, hoists, horns, hose, hubs, hydrometers, ignition, indicators, injectors, jacks, jigs, joints, knuckles, lamps, lathes, leather, levers, locks, lubricators, machinery, magnetos, maps, mechanical starters, metal parts, meters, measuring instruments, molds and cores, motor controllers, motors, mufflers, nuts, oils, odometers, packing, paints, pans, pinions, pins, pistons, platinum, plugs, presses, primers, printed matter, pullers, pulleys, pumps, punches, purifiers, races, racks, radiators, ratchet drills, reamers, rectifiers, recording time clocks, reflectors, regulators, removers (carbon), rests, rheostats, rims, rods, rubber, scrapers, screws, searchlights, seats, separators, shafting, shapers, shims, shock absorbers, sockets, spokes, springs, starters, steel, steering wheels, steps, storage systems, strainers, switchboards, switches, tanks, terminals, testers, timers, tools, transmissions, trimmings, trunks, tubing, turntables, valves, vaporizers, varnishes, vises, voltmeters, vulcanizers, washers, wash stands, waste, wheels, whistles, windshields, wire, wrenches and special bodies for pleasure and commercial cars.

Schenectady, N. Y.; Indian Garage Company, Inc., 509 Smith street, is anxious to secure air compressors, air pumps, autogenous welding equipment, cranes, fire extinguishers, greases, hoists, hydrometers, jacks, oils, springs, tanks, tire accessories, tires, tools, vulcanizers, waste. The goods are to be used for equipment and supplies.

Greensboro, N. C.; Carolina Motor Equipment Company wants axles, batteries, bodies, bolts, brushes, bulbs, cable, charging apparatus, connectors, controllers, dimmers, generators, greases, headlights, horns, hubs, hydrometers, ignition, indicators, lamps, magnetos, meters, measuring instruments, motor controllers, motors, oils, plugs, rectifiers, reflectors, regulators, rheostats, screws, searchlights, separators, sockets, starters, switchboards, switches, terminals, testers, timers, voltmeters, wire and special bodies for commercial cars.

GASOLINE PLEASURE CARS.

Woodstock, Ill.; E. R. Goodrow & Son is in the market for gasoline pleasure cars; selling price, $650 to $850.

Malden, Mass.; E. T. Hazen, 706 Salem street, is interested in securing the agency for gasoline pleasure cars; selling price, $500 to $1200.

Schenectady, N. Y.; Indian Garage Company, Inc., is interested in gasoline pleasure cars; selling price, $395 to $600.

Madison, Wis.; The Marks Auto Company, 115-123 South Blair street, wishes to obtain the agency of gasoline pleasure cars; selling price, $500 to $850.

Milwaukee, Wis.; Stutz Motor Car Company would like to secure the agency for gasoline pleasure cars; selling price, $800 to $1000.

GASOLINE COMMERCIAL CARS.

Woodstock, Ill.; E. R. Goodrow & Son is in the market for gasoline commercial cars; selling price, $650 to $850.

Bangor, Me.; The Brugan Company would like to secure the agency for gasoline commercial cars; selling price, $400 to $1000.

Bangor, Me.; Herbert T. Friend, 40 Cumberland street and 96 Harlow street, is interested in gasoline commercial cars; selling price, $500 to $700.

Nebraska City, Neb.; Warren T. Neihart is in the market for gasoline commercial cars; selling price, $600 to $3000.

Greensboro, N. C.; Carolina Motor Equipment Company wants the agency for gasoline commercial cars; selling price, $500 to $1000.

REPRESENTATIVES WANTED.

Somerville, Mass.; The Standard Auto Horn Company, Inc., wants representatives everywhere.

SPECIAL OPPORTUNITY.

Chicago, Ill.; J. R. Smith & Co., 513 N. Dearborn street, would consider agency for metal auto garages in the territory of Chicago, Ill.

Louisville, Ky.; Hodapp & Miller is interested in a five-ton trailer in the territory of Kentucky and Southern Sudiana.

Minneapolis, Minn.; C. L. S. Holmes, 702 Boston block, is interested in one or two good lines to sell to only the jobbing trade.

Seattle, Wash.; Peter J. Herlan, manufacturers' sales agent, 1703 31st avenue, South, would like to represent manufacturers of valve grinding compound and carbon removers in the states of Washington, Oregon and Idaho, in which he now travels.

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BIG SHOW SEASON IN VIEW.

Indianapolis and Other Mid Western Exhibitions Taken As Forecasts for Season.

The annual fall automobile show held under the auspices of the Indianapolis Automobile Trade Association at the Indiana State Fair was the most successful ever held by the organization, the attendance exceeding 100,000.

While the exhibit was held in a tent and under anything but favorable conditions, weather conditions were good and thousands flocked to inspect the new models. The exhibits included over 70 different makes and an unusual feature was the effort to display the design and style of machines rather than their mechanical characteristics, as the people seemed less inclined to inspect the latter.

DEALERS HOLD LUNCHEONS.

The fall luncheons and meetings of the members of the Kansas City Motor Car Dealers have been resumed and the old time enthusiasm prevails at the gatherings which are held in the Baltimore hotel.

DEALERS ORGANIZE.

At a meeting of garage men, dealers and repair men, held in Lima, O., the Allen County Automobile Trade Association was organized and steps were taken to affiliate with the Ohio Automobile Trade Association. There was a large attendance present and enthusiasm developed over the prospect of securing the membership of every dealer and garage owner in the county.

NEW MICHIGAN ORGANIZATION.

The Oakland County Automobile Trade Association was organized and became affiliated with the Michigan association at a meeting of dealers and garage men of Oakland county, Mich., held in Pontiac recently.

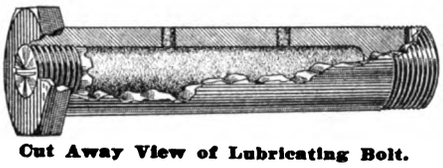
Officers of the organization were elected as follows: President, G. R. Williams; vice president, H. M. Fawcett; secretary, Charles Grossbeck; treasurer, F. S. Millman; directors, J. A. Boughner, J. H. Collins, C. W. Harris and A. S. Widrig.

LUBRICATING BOLT PATENT.

The Brown Company, Syracuse, N. Y., manufacturer of automobile parts and motor specialties, has taken over the exclusive license under the automobile lubricating patent recently granted to David Landau of New York City and H. G. Farr of Springfield, Mass., and predicts a large demand for the bolts.

The bolt was first publicly displayed in 1913 at the Madison Square Garden automobile show and since then has been thoroughly tested. While intended primarily for use as a spring shackle bolt, its principle makes it adaptable to all kinds of mechanism requiring continuous feed of fluid oil for internal lubrication.

As shown in the illustration, there is a main reservoir wick of felt that is positively attached to a threaded cap plug and one or more feed or filter wicks; the reservoir felt is under a slight compression that forces all the surfaces of the felt against the interior of the bolt; the feed and filter wicks rest against the main reservoir wick and carry the oil to the bearing by capillary attraction, or lamp wick fashion. The reservoir wick is made a "sucking fit" and thus for filling the bolt with oil is made into an efficient oil pump, the cap plug forming a handle for operation.



Cut Away View of Lubricating Bolt.

The method of lubricating the bolt is as follows: The reservoir plug is removed, the oil injected and the wick inserted and worked back and forth like a pump plunger. In testing the bolt it was found that after continuous service on a series of cars weighing, unloaded, about 5100 pounds for a period of more than two years, that the least mileage recorded was 28,000 miles, and the greatest 52,000 miles, and that the least amount of wear was .002 and the most .009 of an inch. The car operators testified that they did not have a spring squeak or rattle while the bolts were in use.

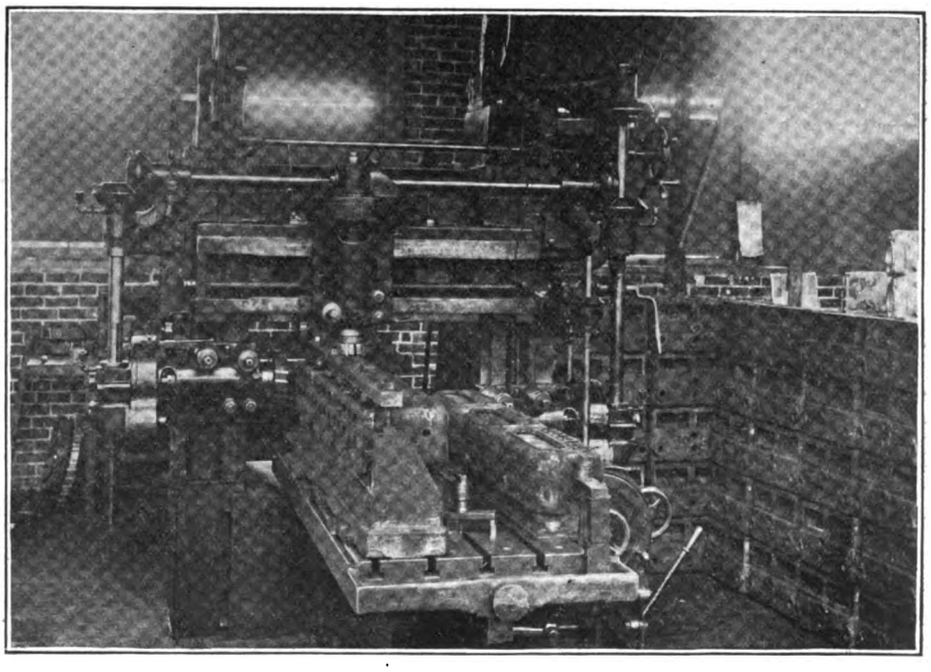
GETTING PROSPECTS.

C. R. Constant of Constant & Groves, Springfield, Ill., Hupmobile distributor, has a unique method of obtaining live prospects. Mr. Constant says: "I find the daily newspapers can be used to very good advantage in getting the names of prospects. From every newspaper you pick up you see the names of at least a dozen prospects, some one who has been promoted, some wealthy person who has just come to town or some one who has just received a lucrative appointment."

GIRL SELLS HUPMOBILE.

Miss Myra Shearer of Carlisle, Penn., only 16 years of age, is successfully handling the business of the Mansion House Garage of that city, distributors of the Hupmobile. Rippy and Joseph Shearer, her brothers, who are the proprietors of the garage, went to the Mexican border with the state militia when the call for volunteers was sent out and are still in Texas. Their little sister has proved herself thoroughly competent and efficient as a business getter.

The Cutler-Hammer Manufacturing Company of Milwaukee, Wis., manufacturers of the C.-H. magnetic gear shift, have issued a very interesting four-page folder, which describes the advantages of the concern's product and a 150-mile trip taken by a man in a car equipped with the C.-H. device. The man had purchased his car but 2½ hours prior to starting out on the trip and had never driven a car before.



HOW ALLEN MILLS MOTOR BLOCKS.

This View Is Indicative of the Modernity and Completeness of the Manufacturing Equipment of the Allen Motor Company, Being a Corner of Its Plant at Fostoria, O., Showing an Ingersoll Multiple Spindle Milling Machine Used in Milling Allen Motors.

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ACTIVITIES OF PROMINENT MEN OF THE INDUSTRY.

News Concerning Well-Known Members of the Motor Vehicle and Allied Industries.

Guy W. Morgan of the Mitchell Motor Car Company of Racine, Wis., has been appointed president and general manager of the Consolidated Car Company, manufacturers of the Abbott-Detroit car. For 15 years Mr. Morgan has been prominently identified with the automobile industry, starting first in the marketing of machines at both retail and wholesale in the Chicago district, and for a number of years after that he took a leading part in the sales organization of the Mitchell Motor Car Company. He also has been director of purchases for the Mitchell company and has taken a strong part in the handling of the financial affairs of the institution.

L. G. Dodge has resigned as general sales manager for the Houk Manufacturing Company, Buffalo, N. Y. He was once associated with the Olds Motor Works as branch manager, district manager and assistant sales manager, doing reorganization work at St. Louis, Buffalo, Boston and the Pacific Coast.

J. M. Barker is now associated with the Kentucky Wagon Manufacturing Company's sales staff and will demonstrate the merits of Old Hickory motor trucks to the trade in Alabama and Georgia. He was identified for a number of years with the I. H. C. truck line in Alabama and the South.

D. F. Edwards, who was comptroller of the Olds Motor Works of Lansing, Mich., has resigned to become an executive and director in the Gier Pressed Steel Company of Lansing, in which he is substantially interested. Mr. Edwards has been actively identified with General Motors' interests during the past five years, starting as assistant to the president, which position he left to become Olds comptroller. He is succeeded by C. E. Stowe, his former assistant.

K. E. Kilby, Chicago, Ill., has resigned as advertising manager of the Woods Mobilette Company and the Sheridan Commercial Car Company. H. W. Harrington, general manager of the company, has taken up Mr. Kilby's former duties.

Edwin K. Gordon of the H. E. Lesan Company, New York City, has been elected a member of the board of directors of the U. S. Light and Heat Corporation, Niagara Falls, N. Y. Mr. Gordon has so successfully handled the publicity and advertising matters that it was thought to the company's interest to have the benefit of his advice and counsel as one of the directors of the company.

Herbert G. Fitch, former service manager of the Willys-Overland Company, has become purchasing agent of the Houk Manufacturing Company at Buffalo, N. Y. He is widely acquainted with the activities of the trade and his new duties will give him an opportunity

Hal T. Boulden, New Sales Director of Selden Truck Sales Company.

to display his knowledge and his ability as purchasing agent.

H. T. Boulden is now associated with the Selden Truck Sales Company of Rochester, N. Y., as sales director. He was formerly with the Chase Motor Truck Company, serving as general sales manager and associate executive in charge of sales and advertising. Mr. Boulden will be succeeded in the Chase company by B. E. Blackley, who for some time past has been acting as his assistant. R. H. Salmons, who has been active in the sales work in the Selden organization, will continue to look after the details of the export business.

A. K. Hebner, formerly service supervisor of the Hyatt Roller Bearing Company, has become general manager of

A. K. Hebner, General Manager, Bearings Service Company.

Resignations, Promotions and Other Changes in Personnel Recently Announced.

the Bearings Service Company. He was for two years in charge of Hyatt service and now heads the work of the new company that takes over the service departments of the Hyatt company, the Timken Roller Bearing Company and the New Departure Manufacturing Company. Service stations are opened for the three companies at Atlanta, Boston, Chicago, Detroit, Los Angeles, Minneapolis, New York, San Francisco and Seattle.

D. L. Watson, formerly general sales manager of the Haynes Automobile Company, is now assistant general manager, aiding A. G. Seiberling, who has been general manager of the Haynes company during the past three years. On Mr. Watson's promotion, Hugh R. Perry, who was assistant sales manager, became head of the sales department. Mr. Watson entered the employ of the Haynes company 16 years ago and has served as manager of the technical service bureau, purchasing agent, assistant sales manager and sales manager.

Ralph Webster, formerly manager of the Eclipse Manufacturing Company of Elmira, N. Y., has been appointed sales manager of the Houk Manufacturing Company. His career in the automobile field dates back to the making and marketing of coaster brakes for bicycles.

C. A. Gilbert has resigned as general sales manager of the Gibney Tire and Rubber Company, Philadelphia, Penn. He was formerly Pacific Coast manager for the United States Tire Company, which position he resigned in order to go with the Gibney company.

H. H. Rice is now assistant to President W. C. Durant in the Detroit offices of the General Motors Company. He was formerly head of the Waverly Company, Indianapolis, Ind., as its general manager. Mr. Rice has specialized on labor, factory conditions and allied questions, and his work for the General Motors Company will be along these lines for all the various properties.

Pearl A. Lewis has become associated with the Kelly-Springfield Motor Truck Company, Springfield, O., as assistant to President James L. Geddes. He was formerly with the American Seeding Machine Company.

E. E. Arnold has been appointed manager of the automobile accessories department of the H. W. Johns-Manville Company, New York City. He was formerly with the Sears-Cross Company, maker of a speed indicator.

C. A. Dunkelberg has resigned as treasurer of S. F. Bowser & Co., Fort Wayne, Ind., after being connected with the company for 17 years. He is succeeded by W. G. Zahrt, who has been a Bowser man for 12½ years.

Don S. Devor has been appointed production manager of the Olds Motor

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Works of Lansing, Mich. He was formerly assistant factory manager of the firm, having served in that capacity for a number of years. Before going to Olds he was prominently identified with the Allis-Chalmers Company of Milwaukee, in production work.

B. D. Zimmerman has been elected secretary and treasurer of the Milwaukee Auto Engine and Supply Company, Milwaukee, Wis. The company makes engines and parts and is headed by B. Amann as president and F. Lederer as vice president.

A. B. Hanson has become vice president and general manager of the Detroit Commercial Car Company. He was formerly general manager of the Service Motor Truck Company.

Lloyd P. Jones has been appointed sales manager of the Federal Brass Works, Detroit, Mich. For the last five years he has been connected with the American Bronze Company and since 1913 has been manager of the western office.

N. E. Wahlberg, chief engineer of the Oakland Motor Car Company, has resigned to become associated in a similar capacity with the Nash Motors Company, Kenosha, Wis., the new organization headed by C. W. Nash, formerly General Motors president, which company is to manufacture Jeffery cars.

F. A. Wagner has been appointed sales and advertising manager of the Michigan Auto Trailer Company, Detroit, Mich., builders of both light and heavy trailers for cars and trucks.

Clete Mulick is now assistant branch manager of the Minneapolis territory of the Studebaker Corporation. He succeeds L. C. Stevenson, who has taken a large dealer's contract with Studebaker in Montana. Mr. Mulick has been salesman and assistant manager at San Francisco and Portland for the Studebaker Corporation.

J. L. Aikenhead, who has been connected with the sales department of the Paige-Detroit Motor Car Company, Detroit, Mich., as sales manager of the order department, has resigned to become distributor of the Paige in Chicago with the Bird-Sykes Company.

L. Meyrick, formerly with the Lavine Gear Company, Racine, Wis., is now general superintendent of the Ferro Machine and Foundry Company, Cleveland, O.

A. C. Leverton has been appointed factory manager of the Briscoe Motor Corporation, Jackson, Mich. He formerly was general superintendent of the Chalmers Motor Company, Detroit, Mich., and previous to his Chalmers connection was works manager of the Cartercar Company and before that general superintendent of the Brush Runabout Company.

Cornelius T. Myers has severed his connection with Timken-David Brown Company and disposed of his interests to the Timken-Detroit Axle Company. He was formerly chief engineeer and later manager in charge of engineering, manufacturing and sales of the company.

Forest J. Alvin has become general sales manager of the United States Motor Truck Company at Covington, Ky. Until the recent purchase of the New Era Engineering Company, Joliet, Ill., by the Elgin Motor Car Corporation, Mr. Alvin was president and general manager of the New Era company. He is one of the pioneers in the motor car industry, being active in that field since the late '90s. Twelve years ago he was president of the Auto Trade Credit Association in New York City and also president of the New York Export and Import Club. In addition to his general sales experience, Mr. Alvin is recognized as an astute purchaser of materials and parts and is considered one of the leading production men in this country.

F. J. Alvin, Sales Manager of the United States Motor Truck Company.

H. A. Lozier has resigned as president of the company which bore his name, the H. A. Lozier Company of Cleveland, O., manufacturers of the H-A-L Twelve. He has been succeeded by A. Ward Foote of the Foote-Burt Company, machine and tool makers.

Charles F. Redden, of the Redden Motor Truck Company.

R. S. Willis has been appointed purchasing agent for the U. S. Rubber Company to succeed C. A. Emerson, who resigned after a period of 30 years in active service with the corporation.

H. Milton Richardson has become branch manager of the Detroit factory branch of the Chevrolet Motor Company. He was assistant manager of the company for over two years. He succeeds C. E. Dawson, who has become connected with the main factory as zone supervisor.

Albert Hauptli, Jr., formerly of the New York branch of the General Sales Company, has been appointed district sales manager, covering the territory of Wisconsin, Minnesota, Iowa and Nebraska.

Charles F. Redden, former general sales manager of the Maxwell Motor Company, and for many years eastern manager of the Studebaker company, secured for the Redden Motor Truck Company the exclusive license under Cook patent No. 1,180,475. The company's headquarters are in Detroit and it has branches in New York and London.

Carrol Ragan has become assistant advertising manager for the Guaranty Securities Corporation, New York City. His experience in handling bond advertising for the American Real Estate is proving of much value in explaining in print the Guaranty plan of buying automobiles.

C. B. Durham has been promoted to general master mechanic of the factories of the Buick Motor Company, Flint, Mich. He was for some time in charge of Plant No. 1. R. E. Benner, research engineer, has been made general superintendent, while W. J. Browne has been made manager of Plants Nos. 1 and 4. Mr. Browne's position, in charge of the assembling plant, has been given to P. J. Moohn.

Donald McKenzie has joined the Falls Motor Corporation, Sheboygan Falls, Wis., as general superintendent. He was formerly chief inspector for the Continental Motors Company.

M. Brussel, who has been with the Ferro Machine and Foundry Company, Cleveland, O., as general superintendent for the last four years, has resigned to accept a similar position with the Delco company, Dayton.

George H. Scott, formerly manager of the Hudson-Philips Motor Car Company, St. Louis, Mo., is now wholesale manager of the Hudson establishment in Memphis, Tenn. He was also vice president and general manager of an extensive used car distributing company in Philadelphia.

Lou White has joined the sales force of H. A. Porter, Western Michigan agent for Paige cars at Grand Rapids, Mich. Mr. White has been associated with the sales department of the Maxwell, working with the Moran Auto Sales Company and later joined the sales force of the Velie Motor Company's Chicago branch.

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H. B. Dwyer has been appointed district supervisor of service of the Studebaker New York branch. He was formerly district supervisor of the Atlanta, Ga., branch. The position he relinquishes has been taken by Buy Finn, who previously was service representative, with headquarters at Atlanta.

F. J. Comer has charge of the service department of the newly established agency for Ford cars, the Fen Far Company, located at 2165 E. Ninth street, Cleveland, O.

Frank W. Stockbridge has been appointed manager of the Boston branch of the Winton company. He was formerly manager of the Minneapolis branch, of which W. A. Rafter will be manager. The latter was formerly manager of the Milwaukee branch and will be succeeded by Charles L. Davis, travelling sales supervisor.

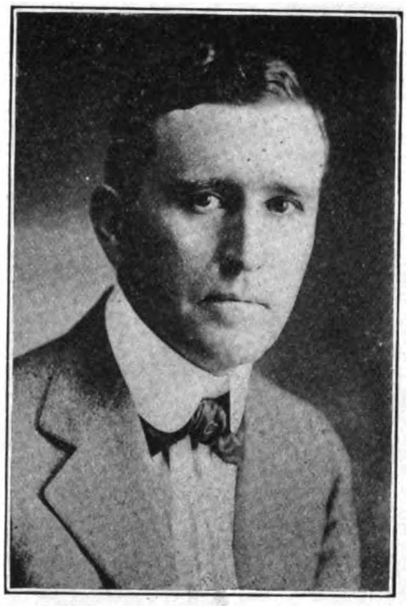
Herbert H. Murden, general manager and engineer of the Knickerbocker Motor Truck Manufacturing Company, New

Herbert H. Murden, with Oliver Brothers, Inc., New York City.

York City, has resigned. He is now connected with Oliver Brothers, Inc., purchasing agents, 71 Murray street.

Walter D. Grant has severed his connections with the Cadillac Motor Car Company and is now superintendent for the Radford Block Company, agents for Marmon and Oakland cars, 1225 Woodward avenue, Detroit, Mich., covering part of Canada, part of the State of Ohio and all of Michigan. He was formerly associated with the Packard company, and also the Cadillac, in Providence, R. I.

Thomas D. Culberhouse, former treasurer of the Oakland Motor Car Company, and Oakland Motor Company, and for a long time associated with the General Motors organization as special accountant and auditor, is treasurer of the Wallace C. Hood Service Bureau. He has under his direct charge and supervision the public accounting and auditing departments. Mr. Culberhouse has prepared 21 systems and classifications of accounts for automobile branch houses and dealers, and has served with the



Thomas D. Culberhouse, Treasurer of the Wallace C. Hood Service Bureau.

Northern Engineering Works and many automobile manufacturing concerns.

Lon R. Smith assumed the duties of manager of sales of the Buda company of Chicago and Harvey, Ill., manufacturers of the well known Buda automobile, truck and tractor motors, on Sept. 15. For the last six years he has been western representative of the Eisemann Magneto Company, with headquarters in Indianapolis. Mr. Smith is chairman of the Indiana section of the S. A. E., vice president of the Hoosier Motor Club, of which he is a director, and holds other offices in both the Hoosier Motor Club and Indianapolis Automobile Trade Association, as well as the Indianapolis Gun Club.

F. Hallett Lovell, Jr., for many years president and principal owner of the Lovell-McConnell Manufacturing Company of Newark, N. J., makers of the Klaxon horn, has sold his interest in the company to the United Motors Company

Lon R. Smith, Manager of Sales of the Buda Company.

and will retire from all active connection with the company. Mr. Lovell was the first one to conceive the idea of a Jobbers' Association among automobile accessory houses and the present N. A. A. A. J. of which he is a director. With Mr. Lovell's retirement the name of the Lovell-McConnell Manufacturing Company will be changed to the Klaxon Company. D. A. McConnell, who is vice president, will become president. Ottis Friend will be the new vice president and Walter P. Coughlan, who has been secretary, will become secretary and treasurer.

Charles J. Bour, president of the Bour-Davis Motor Car Company of Detroit, Mich., has resigned his Chicago activities to give his entire time to the automobile manufacturing industry. Mr. Bour has been for 25 years in the advertising business. He is a director and vice president of the Chicago, Duluth and Georgian Bay Transit Company, operating the steamers North America and South

Charles J. Bour, President of the Bour-Davis Motor Car Company.

America, and also a director and vice president of the Illinois Kaolin Company.

Thomas Bradley, for 5½ years with the Paige-Detroit Motor Car Company as assistant in the purchasing department, has been promoted to the position vacated by P. E. Stroup, former purchasing manager.

W. H. Kirkpatrick, Detroit, Mich., has been elected vice president of the Wallace C. Hood Service Bureau. He was for nine years head of the sales department of the Peerless Motor Car Company.

S. Cohen, formerly connected with the Universal Rubber Company of Philadelphia, has entered the tire field on his own account, with headquarters at Bloomfield, N. J., where he will conduct the sale of unguaranteed tires by mail order. Mr. Cohen is prepared to fill orders from dealers in any quantity. He is desirous of forming connections in all sections of the country.

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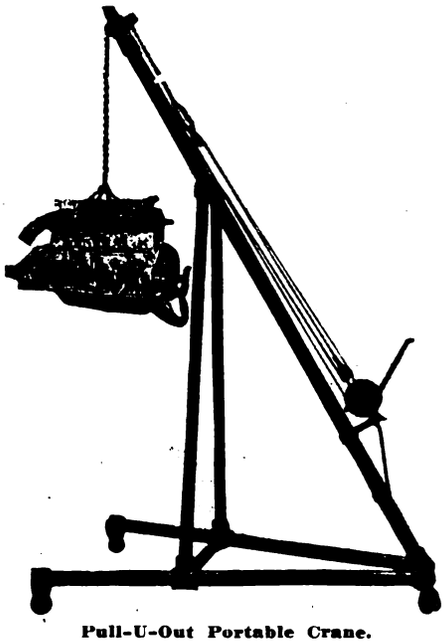
Tools and Equipment for Garages and Service Stations.

PULL-U-OUT PORTABLE CRANE.

The portable crane illustrated herewith consists of the standard Pull-U-Out tackle applied to a portable frame or derrick. This is made of 2½-inch extra heavy steel tubing constructed with slip joints so that it may be easily transported and readily put together again by means of an S wrench. The supporting pulley at the top of the frame stands about 10 feet from the floor, giving a total lift of nine feet six inches and an overhang of 23 inches. This makes it possible to lift out the engine of most any car and, as it is mounted on strong roller wheels, may be rolled wherever there is a suitable floor. In this way it does the work of an entire system of overhead tracks without the limiting restrictions of the same. It is so built that the capacity weight cannot tip it over. The lifing capacity is rated at one ton and the total weight of the outfit is only 300 pounds. The Pull-U-Out portable crane solves the problem of hoisting and transporting heavy objects from one part of the shop to another. The Pull-U-Out can be easily detached from the crane and used separately for all manner of hoisting and pulling jobs. This has been described as a mechanical device which multiplies man's work by 73, "making heavy pulling or lifting a boy's work."

Distributed by the Pull-U-Out Sales Company, 2018 Market street, St. Louis, Mo. Price, complete with Pull-U-Out, $50.



Pull-U-Out Portable Crane.

F-F BATTERY CHARGER.

The new patented F-F magnetic rectifier requires practically no upkeep expense, the cost per charge being simply for the current put into the battery, which makes the cost of operating very small. A six-volt, 80 ampere-hour battery can be charged with one kilowatt-hour or unit of current costing but from three to 10 cents, depending upon the local rate per electric unit. A larger or smaller capacity battery would cost in proportion. This rectifier is self-starting and automatic in operation, a magnetic circuit breaker opening the charging circuit whenever the alternating current is turned off or temporarily interrupted. The outfit with ammeter is readily portable, weighing but 12 pounds, and the charge operations can be started almost instantly and most anywhere a light socket is found. Type 1636 rectifier operates on 110-volt, 60-cycle alternating current and charges six or eight-volt batteries of any amperage-hour capacity. The rectifier itself is of 60-watt capacity.

Manufactured by the France Manufacturing Company, Cleveland, O. Price of outfit complete with 20-ampere meter, $15, f. o. b. Cleveland.

NEW BRITAIN LATHE PAN.

The lathe pan illustrated herewith is designed to replace the old-fashioned wooden trough or sheet iron makeshifts which, on account of the greatly increased chip producing ability of modern tools, made possible by high speed steels and stronger lathes, are no longer adequate. This piece of equipment consists of a cast iron pan mounted firmly on four legs having castors with ball bearing swivels, which makes it an easy matter to move it about the shop. For lathes that are not too low to accommodate it, a shelf is provided, as shown in the cut. A petcock set in the bottom of the pan makes it possible to drain off oil that collects, which may be strained and used again. To remove the chips or other accumulations a slight push is all that is necessary to roll the pan from under the lathe so it may be thoroughly cleaned out when it is slid back in place again. It is made in a wide range of sizes, with or without the lower shelf.

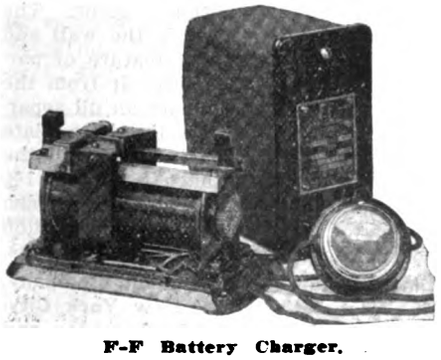
Made by the New Britain Machine Company, New Britain, Conn. Prices and sizes on application.

EVERY WAY ENGINE STAND.

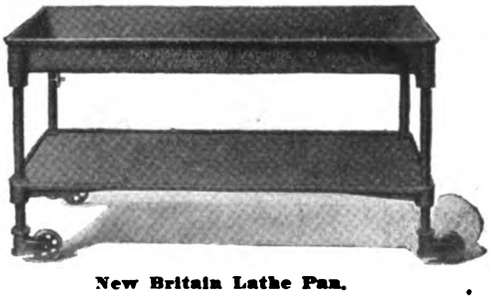
The Every Way engine stand is a tool for holding a complete motor or power plant so that it may be turned in any position for convenience in repairing or overhauling. The device consists of a steel frame base supporting two hollow cored cast iron uprights, one of which is securely bolted at one end of the base, while the other is adjustable to take any width of engine. Trunnioned at the upper end of these uprights is a steel frame having numerous holes drilled in it to bolt on any make or size engine. Provision is also made so that motors of four or three-point suspension may be accommodated. By means of two braces, which slide in a groove made on the outside of the uprights, the engine may be held clamped in any position. As the overhauling of a motor is probably the most particular and accurate job on the whole chassis, this tool facilitates the proper performance of the operation, eliminating the use of and insuring against damage by failure of the shaky and often unstable wooden frames usually used for this work. This stand may be had for use as a stationary fixture to be bolted to the floor, or it may be mounted on wheels for transportation about the shop.

Made by the United Engine and Manufacturing Company, Hanover, Penn. Prices, $30 with stationary equipment, and $47 with portable equipment.

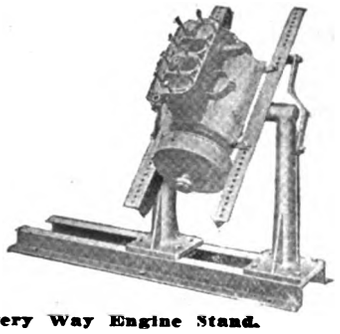
Jas. H. Matthews & Co., 3942 Forbes street, Pittsburg, Penn., has published a new catalogue showing a large variety of steel lettering dies and stamps and interchangeable steel type holders. The catalogue is free to the trade upon application.



F-F Battery Charger.



New Britain Lathe Pan.



Every Way Engine Stand.

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COMPO CRUTCH.

The Compo Crutch is designed to be used as a front or rear wheel conveyor for disabled cars. It is attached by means of bolting its tie rod with four clamp nuts to the steering cross or tie rod of the motor car. Our illustration shows that the crutch consists of two main supporting bars, connected to a yoke which may be locked when used for a rear wheel or adjusted for steering when used at the front. The axle is clamped to two supporting bars. By removing one bolt the wheel may be detached from the frame, making a compact load weighing but 63 pounds.

Manufactured by the Gearless Differential Company, Detroit, Mich. Price with wheel for 3½-inch tire (tire and tube not included), $30.

PORTABLE ELECTRIC TOOL.

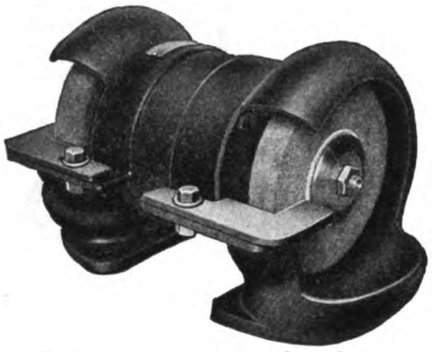
The model B Temco garage outfit is adapted to drilling, tapping, sharpening tools and valve grinding. It is electrically operated by either alternating or direct current and can be attached to any light socket or drop cord. The emery wheel and valve reseater are quickly adjusted to the drill. The drill spindle speed is regulated automatically and affords the correct speed for different size drills. A single control switch starts, stops or reverses the motor. These operations can be performed without releasing the hold on the handle. The valve reseater attachment works at high speed with an oscillating movement that insures rapid and perfect valve reseating. The stem that fits and operates the valve is allowed but a three-eighths turn, thus eliminating all danger of grooving the valve seat. It requires but a few seconds to attach the emery wheel to the tool and the combination affords an invaluable tool sharpener which can be taken to any part of the shop. The drill, motor and attachments are made of the best materials obtainable and are guaranteed to be right in every detail, both in material and workmanship.

Manufactured by the Temco Electric Motor Company, Leipsic, O. Write for descriptive circular and prices.

BENCH GRINDER.

One of the most popular emery wheel or grinder now on the market is the Forbes & Myers six-inch bench grinder, model 56, which may be bolted onto the bench or set up on a stand. The grinder consists of a simple type of induction motor direct connected at each end to the grinding wheels, which are partly enclosed by guards to prevent injury by flying particles. Adjustable rests are also provided. The grinder may be operated from the ordinary lighting circuit of 110-120 volts or, if desired, can be furnished for 440-550 volts. Ordinarily it is furnished with two direct leads for permanent connection, but can be had with an extension cord and plug for use from a light socket. The motor is fully enclosed and free from trouble due to oil, grease, dirt or moisture. It is mounted in the most approved manner on the best grade of ball bearings. reducing friction to a minimum. A grade of wheel suitable for average use is ordinarily furnished, but any grain, or grade, or particular shape, may be obtained. As a means of sharpening tools, smoothing off rough places or cutting down stock rapidly, these grinders are seldom equaled.

Made by Forbes & Myers, Worcester, Mass. Prices on application.

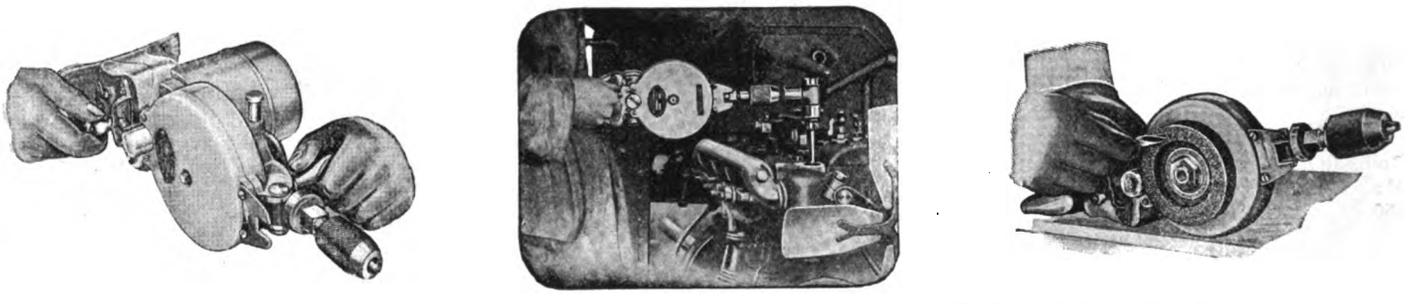


Forbes & Myers' Bench Grinder.

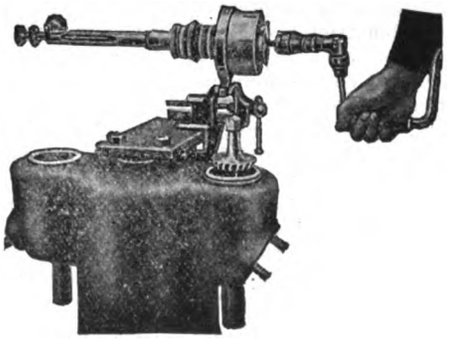
CRONE VALVE TOOL.

The Crone valve tool and reseater is claimed to have the following outstanding advantages: It cuts the valve true with a minimum loss of material, prolonging the life of the valve; does its work in one-quarter the time usually required and consequently makes the operation economical and not laborious. Our illustration shows the two parts of the tool in use. The valve dresser, which is provided with a chuck which takes valve stem from ¼" to 9/16" diameter and reseats valves from 1" to 3" diameter, is held in a vise mounted on the cylinder. The chuck is locked by a nut and the amount to be dressed off the valve head can be regulated by an adjustable feed screw. The valve is rotated by an ordinary breast brace and bit screw driver, which is also used to operate the cutter. The cutter and valve dresser head are designed not to chatter and to insure an absolutely true seat.

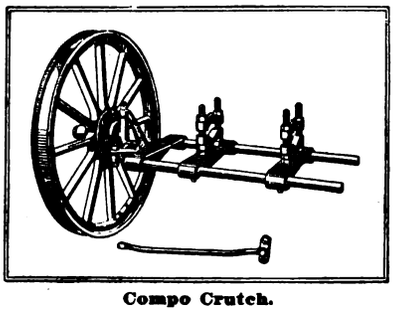
Manufactured by F. G. Crone, 334 Greene street, Buffalo, N. Y. Price of complete set, $30; parts sold separately if desired.



The Model B Temco Garage Outfit for Drilling, Tapping, Sharpening Tools, and Valve Grinding.



Crone Valve Tool.



Compo Crutch.

HERZ TANDEM OUTFIT.

The Herz tandem pumping outfit, shown in the accompanying illustration, is an electrically driven garage pump, especially suited for private or small public garages. It is a B. B. twin-cylinder pump, which is gear driven from a 1/6 horsepower electric motor. The gears are located towards the wall and protected by guards. A feature of particular interest is that the air from the compressor is first led into an oil separator cast integral with the base plate and from there through a hose to the tire. The cylinders have a bore of 1⅜ inches and a stroke of 2½ inches. Splash lubrication is used. Herz construction incorporates piston rings on the pistons.

Manufactured by Herz and Company, 245 West 55th street, New York City. List price, $60 with a D. C. motor, and $65 with an A. C. motor.

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PRACTICAL MOTOR CAR REPAIRS IN THE GARAGE.

STRAIGHTENING FRAMES.

(Figure 1.)

Practically any motorist can straighten the frame of his car if it has become bent by using a jack in the manner shown in the illustration. The application of heat by means of a plumber's torch, not only makes the work easier, but enables the work man to localize and control the point where the metal will yield to the pressure of the jack, besides minimizing the danger of fracture.

If either the top or bottom web of the channel section has been partially torn by an accident, or in the straightening operation, the frame will be weak at that point and should be reinforced. This may be done by fitting a flitch plate to the inside of the channel, having its centre opposite the fracture and attached to the vertical web with rivets, as shown in the sketch.

Rust may be removed from nickel by smearing the parts with grease and allowing it to remain for several days. If the rust is not bedded too deeply in the metal it can be rubbed off with the grease, a cloth dipped in strong ammonia being utilized for the purpose. If it be very deep, apply a diluted solution of hydrochloric acid.

FITTING NEW VALVES.

(Figure 2.)

When a new valve is fitted to an engine that has had considerable service it will often be found that, unless it is ground in, it does not hold compression as well as the old valve, although the latter may present a very uneven appearance. This has been puzzling to some motorists, who have assumed that as the new valve was ground to a true face in its manufacture it should make a perfect joint on the valve seat. This would be true if the seat retained its original angle and surface, but, after being ground a number of times, with the old valve used as a lapping tool, and being continuously hammered by the latter in months of operation, the seat may not only lose its original contour angle, but may have a pronounced "counter sink," especially if the old valve has been so often ground, or faced off in a lathe, that its diameter has been materially reduced, causing it to seat only on the inside edge of the valve opening. In such cases the new valve will rest on a surface which the old one did not touch, as shown in sketch, and this may be more or less covered with carbon, or otherwise rough.

The proper course, in such cases, is to tool the face of the valve seat with a regular valve seating tool, restoring it to the proper angle as well as a true surface, following this with a very light grinding in of the new valve. If a tool is not available, considerable grinding will be necessary, using a coarse abrasive at first to bring the seat contour to approximately that of the valve, finishing up with a smoother compound.

A cement for patching rubber boots and which will also unite leather to leather, India rubber, etc., consists of 15 parts rosin, 100 parts finely chopped India rubber and 10 parts shellac. Dissolve the ingredients in carbon disulphide. The vessel in which the preparation is made should be kept tightly sealed and should be shaken from time to time. Carbon disulphide is highly volatile and must not be exposed to a naked flame.

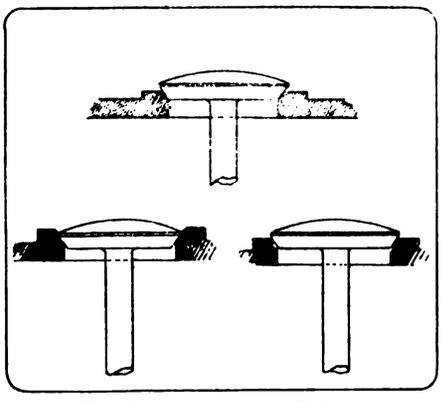

Fig. 2—Fitting New Valves.

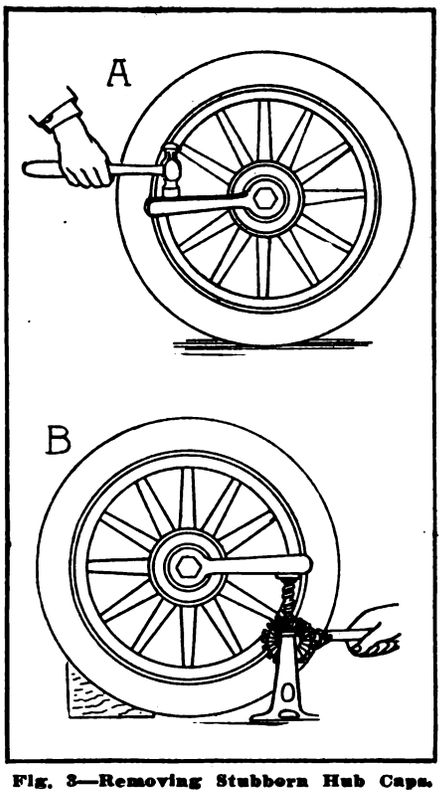

Fig. 3—Removing Stubborn Hub Caps.

STUBBORN HUB CAPS.

(Figure 3.)

Two methods of starting a stubborn hub cap, as commonly practised in garages, are shown in the accompanying sketch. Figure A shows the hammer method, which is not to be recommended for all purposes, because of the possibility of bruising the wrench and injuring your hand, should the wrench slip. A better method is shown at B. If the cap be on a rear wheel the car's brake can be locked to obtain purchase, but should it be on the front a block can be forced against the tire to hold the car steady. A wrench is then placed on the cap and a jack placed to bear against the wrench handle. In this way great pressure can be brought against the cap. If the cap still sticks the only recourse is to heat it with a blow torch, taking care not to blister the paint. Kerosene should then be placed on the thread and the wrench applied before the cap has cooled and contracted to its normal condition.

SILENCING OVERHEAD VALVES.

(Figure 4.)

A practical and simple means of silencing noisy overhead valves is shown in the accompanying illustration. A small spring is fastened to the rocker arm and to any convenient part of the motor or chassis. It may be necessary to make an extension of a piece of wire so as to attach the lower end of the spring, as shown in the sketch. When the spring is properly placed it will overcome all noise that was caused by the valves.

SOLDERING CAST IRON.

One often sees the assertion published that cast iron cannot be soldered, but the following plan has been adopted with success, providing that the repair is not to be subjected to excessive strains or heat. The part to be soldered is cleaned with a brass scratch brush and then the entire surface is covered with soldering acid. The next step is to sufficiently heat the metal so that it will melt and retain a thin coat of tallow. The part can then be soldered in the usual manner.

To rectify used engine oil place it in a transparent vessel and allow it to stand for five or six weeks. It will then be found that the sediment has settled to the bottom of the receptacle. The upper, or clear portion, should be syphoned off and can be used again.

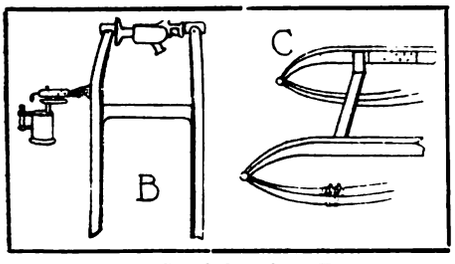

Fig. 1—Straightening Frames.

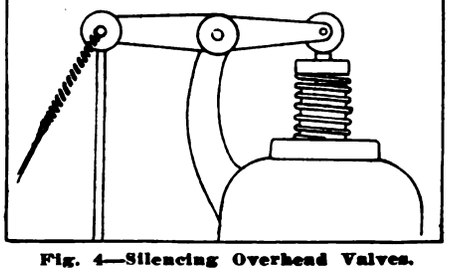

Fig. 4—Silencing Overhead Valves.

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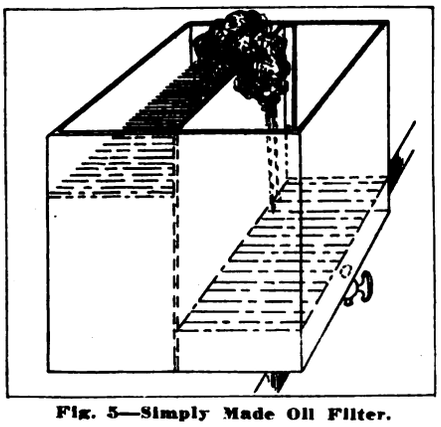

Fig. 5—Simply Made Oil Filter.

SIMPLE OIL FILTER.

(Figure 5.)

As a means of making some use of the old oil that is drained out of the crank cases, or accumulates from one cause or another, the following illustrated filter has been devised by an ingenious mechanic. An oil can such as many of the nationally advertised prepared oils are put up in makes a desirable tank. While the size is not particularly important, the five-gallon cans are convenient and about suited to the amounts of oil usually drawn off from a car at a time. Remove the top, making a container with open top and by means of a partition of like material divide this vertically into two equal parts, soldering the joints and making same oil tight. At the bottom, near the front of one of the compartments, solder in a small petcock for drawing off the strained oil. Call this compartment that has the petcock the discharging tank and call the other compartment the receiving tank. Pour what oil you wish to strain into the receiving tank. Take a clean piece of waste and saturate fully with fresh oil. Immerse this in the receiving tank so that it hangs over the partition into the discharging tank. The oil in the receiving tank at once will begin to flow slowly from this tank by capillary action into the discharging tank, leaving the dirt and sediment behind. By the petcock the strained oil should be drawn off from time to time, taking care that the strained oil does not reach the level of the dirty oil, in which case the action will cease.

REMOVING BOLTS.

(Figure 8.)

When you come across a bolt that is so located as to be awkward to get at with either an ordinary or a socket wrench, or if you find one that screws too hard to be easily worked by the fingers, yet easy enough to make a wrench seem a waste of time, here is a way to do it quickly on the next occasion. Having removed the bolt, clamp it in the vise between two pieces of soft brass (to protect the threads) and with two blades set side by side in your hack saw cut a slot in the head of the bolt from any corner to the one opposite, using care not to cut too deeply, but just so that a screw driver may have a secure hold in the slot. Now when screwing the bolt it will be found to be an easy matter to quickly do so with a screw driver, requiring only a final setting up with a wrench.

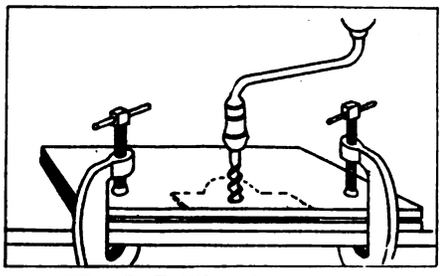

Fig. 6—Drilling Shim Stock.

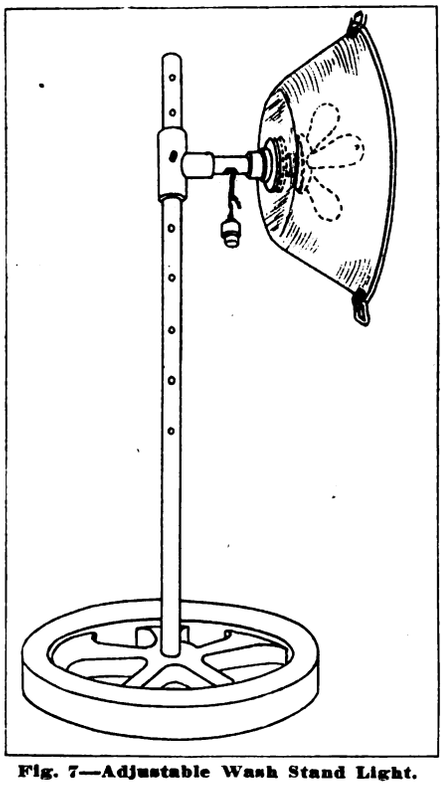

Fig. 7—Adjustable Wash Stand Light.

DRILLING SHIM STOCK.

(Figure 6.)

To bore a clean, sharp hole in thin shim stock it is only necessary to clamp same tightly between two flat boards and drill through boards, shim stock and all with a good sharp wood auger and bit stock. Several thin pieces of shim stock may be drilled at a time in this manner if desired.

WASH STAND LIGHT.

(Figure 7.)

A very simple and apparently satisfactory light for use on the wash stand, or anywhere around the garage for that matter, was found to have been made by one enterprising garage man. He needed a light that could be adjusted in height and intensity as well as portable, and obtained an old flywheel which was of generous diameter, with the weight concentrated mostly in the rim and having a spoked hub with a comparatively small shaft hole, some old gas pipe and a varied assortment of fittings, a three-light cluster and a good sized dish pan. He drove a solid piece of soft stock in the shaft hole of the flywheel, boring this out and threading it so that the gas pipe he had would screw into it good and tight. This gas pipe he cut off so that when in place in its base it reached about five feet from the floor. Then he cut a nipple about three inches long of a size to screw into the light cluster and brought the wires from it by the inside of the nipple, cutting in the same a hole just large enough for the wires, securely taped, to pass through. Then he cut a small hole in the centre of the dish pan and put this on the nipple, holding it in place by two flush plates as shown. Now on the end of the nipple he screwed a tee having the long part of a size to fit easily over the upright pipe he had secured into the flywheel. To hold the tee at desired heights he bored holes through it and the upright of a size to take a large cotter pin or nail.

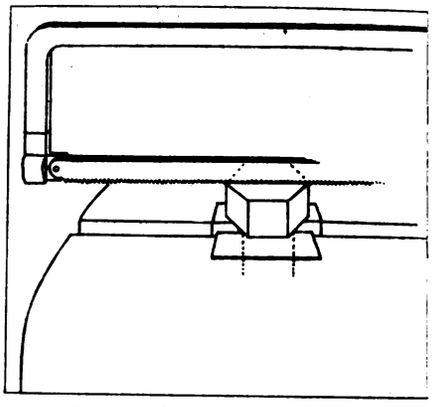

Fig. 8—Simplifying Removal of Bolts.

The wire from the cluster was cut off about four inches from the nipple and connected on a plug socket. By unscrewing any or all lamps slightly in their sockets until contact was broken he could have darkness, dim light or full light. Again, if desired, he could run two extension lights from this fixture and still have one lamp to have reflection cast by the dish pan. By tipping on edge the whole affair could be easily wheeled to one side or about similar to the manner in which barrels are moved about. On the whole this proved a very profitable experiment and not only cost an insignificant sum of money, but brought expressions of admiration from many customers.

TESTING DRY CELLS.

The usual method of testing the efficiency of a dry cell is to place an ammeter in the circuit. Should one of these instruments not be at hand a rough estimate of the condition of the cell can be obtained by attaching a wire to the zinc or shell terminal of the cell and then touching the carbon element lightly with the free end of the lead. If a small puff of smoke arises on contact, it is safe to assume that the cell is in good condition. If the contact produces only a black ring on the surface of the electrode, it is an indication that the cell is nearly exhausted.

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NEW YORK AND DETROIT EXCHANGE QUOTATIONS.

Condition of Automobile Securities and General Material Markets as Reported at the Middle of Last Month and on the Corresponding Day of this Month.

The tabulations following show the advance or decrease in the quoted stock exchange prices of the several active motor vehicle and kindred securities, and of the change in prices of the general material market as it relates to the motor car industry.

	Aug. 10 Bid	Aug. 10 Asked	Sept. 14 Bid	Sept. 14 Asked
Ajax Rubber Co	63	66	62½	64
J. I. Case, pfd	85	90	83½	84½
Chalmers Motor, com	98	101	145	160
Chalmers Motor, pfd	170	180	95	98
Chandler Motor Co	102	104	108	109
Chevrolet Motor, pfd	187	197	190	193
Electric Storage Battery	..	..	..	..
Firestone Tire, com	915	930	990	1025
Firestone Tire, pfd	111	113	110	112
Fisk Rubber Co., com	120	160	99	106
Fisk Rubber Co., 1st pfd	112	120	107	116
Fisk Rubber Co., 2nd pfd	120	..	100	110
General Motors, com	500	520	560	599⅞
General Motors, pfd	113	116	125½	126½
Goodrich, B. F., com	70⅛	70⅝	72	72¼
Goodrich, B. F., pfd	113⅝	114	113⅛	113⅞
Goodyear Tire, com	223	238	247	252
Goodyear Tire, pfd	106½	107	107¼	108
Grant Motor Car Co	8	9	7	8
Hupp Motor, com	..	..	6	6½
Hupp Motor, pfd	..	..	80	100
International Motor, com	5	8	6	10
International Motor, pfd	18	23	15	20
Kelly Springfield Tire, com	70	71	83¼	83¾
Kelly Springfield Tire, pfd	96	97¼	99	100
Lee Rubber and Tire Corp	43	44	47½	48
Maxwell Motor, com	77	77½	81⅝	..
Maxwell Motor, 1st pfd	83¾	86	83¼	83¾
Maxwell Motor, 2nd pfd	54½	57	52½	54
Miller Rubber, com	225	235	223	237
Miller Rubber, pfd	104	106	104	106
Packard Motor Car, com	170	180	165	175
Packard Motor Car, pfd	100	104	..	100
Paige-Detroit Motor Car	45	50	53	56
Peerless Motor Truck Corp	20½	22	23½	24½
Portage Rubber, com	115	118	152	156
Portage Rubber, pfd	115	118	150	155
Regal Motor Truck Co	17	21	20	25
Reo Motor Car	36½	37½	44	45
Reo Motor Truck	42½	43½	44	45
Saxon Motor Car Co	67	72	72	75
Standard Motor Co	5	7	6	7
Stewart-Warner, com	101½	102½	114	115
Stromberg Motor	41½	41¾	..	..
Studebaker, com	125¼	125⅝	123⅞	124½
Studebaker, pfd	109	111	109	110
Stutz Motor	63⅝	64	..	..
Swinehart Tire	100	105	92	95
United Motor Corp	..	..	61⅜	61⅞
U. S. Rubber Corp	53¼	54¼	58	58¼
U. S. Rubber, 1st pfd	108¼	109	111¼	112
Vacuum Oil	..	..	..	..
White Motor Co	51½	53	53	54
Willys-Overland, com	51¾	52	47⅞	48
Willys-Overland, pfd	109	104	103¼	105

DOMESTIC CRUDE OIL PRICES.

The prices of crude petroleum at the wells during the middle of the month of September were:

Pennsylvania dark	$2.30	Corsicana heavy	$.40
Mercer black	1.80	Electra	.95
Cabell	1.82	Henrietta	1.15
New Castle	1.80	Caddo, La., 38°	.90
Corning	1.80	Caddo, La., heavy	.65
Wooster	1.65	Plymouth	1.38
North Lima	1.42	California oil	68-7
South Lima	1.43	Healdton	.40
Indiana	1.28	Moran	.95
Princeton	1.47	Strawn	.95
Somerset 32°	1.65	Thrall	.95
Ragland	.75	De Soto	.80
Illinois above 30°	1.47	Crichton	.55
Kan. & Okla.	.90	Canada	1.83
Corsicana light	.90		

Naphtha.

	10-gal. drums Under 100 cases	10-gal. drums 100 cases and over
Benzine, 59-62°	33¼	32¾
73 a 76°	41	40½
Stove	33½	33
Auto, 68-72°	37	36½

	In cans and cases Under 100	100-199	200-299
Benzine, 59-62°	28½	28¼	28
73 a 76°	36¼	36	35¼
Stove	28¾	28½	28
Auto, 68-72°	32¼	32	31¾

NEW YORK CITY PRICES.

New York City prices for petroleum and its products were:

Petroleum.

Crude, barrels, a gallon	15a18	Fuel, 31°	9
Refined, barrels	12	Fuel, 34°	9¼
Tank wagons delivery	9		

Naphtha.

Auto in wood	22	V. M. & P. deod., in steel	22
Auto in garages, steel bbls.	24	V. M. & P. deod., in wood	24

Gasoline.

Gas machine, steel	37	68-70° steel	28
73-76°	31	68-70° wood	31
73-76° wood	34		

GENERAL MARKET PRICES.

	Aug. 10	Sept. 14
Antimony	10½	11¼
Iron, foundry, S., ton	14.00	14.50
Iron, foundry, N., ton	19.00	19.50
Iron, Bessemer, ton	20.00	20.00
Steel, Bessemer, ton	43.00	45.00
Beams and chan., 100 lbs	2.769	2.769
Copper, elec., 100 lbs	26.75	28.00
Copper, lake, 100 lbs	26.75	28.00
Lead, 100 lbs	5.95	6.80
Tin, 100 lbs	38.00	38.37½
Petroleum, Penn., cr., bbl	2.40	2.30
Petroleum, Kan., cr., bbl	1.15	90
Linseed oil, raw	70	69
Rapeseed oil, refined	90	90
Lard oil, prime	1.05	1.00
Fish oil, Menhaden, br	55	58
Sulphuric acid, 60	3.00	3.00
Cottonseed oil, bbl	9.40	10.15
Silk, raw, Italy	6.00	6.50
Silk, raw, Japan	5.47½	5.50
Rubber, fine, up river, Para	65	72
Tire, scrap	5¾	5⅝
Steel, open hearth, ton	42.00	45.00

FOREIGN TRADE OPPORTUNITIES.

(Address Bureau of Foreign and Domestic Commerce, Washington, D. C., Giving Number, Which Will Forward Correspondence, Unless Otherwise Stated.)

Oils, Greases, Electrical Supplies, Etc. No. 22,167—Supplementing foreign trade opportunity No. 22,046, one of the commercial agents of the bureau advises that an Argentine business man is now in the United States for the purpose of securing agencies for oils, greases, electrical and gasoline motors, packing and valves. References.

Automobiles. No. 22,176—A firm in South Africa informs an American consular officer of its desire to receive catalogues, price and discount lists from American manufacturers of small electric pleasure vehicles suitable for use in city and suburban districts.

Automobiles. No. 22,179—A Norwegian import firm advises an American consular officer of its desire to be placed in communication with American manufacturers and exporters of automobiles. Correspondence may be in English

Automobile Tires and Accessories. No. 22,195—A Norwegian import firm has informed an American consular officer that it desires to be placed in communication with American manufacturers of automobile tires and accessories. Correspondence in English.

Automobiles, Lumber, Etc. No. 22,224—A manufacturers' agent in Spain asks the bureau to place him in touch with the manufacturers of automobiles and exporters of coal, petroleum and lumber, with a view to securing the representation for that country.

Fire Truck. No. 22,306—The commercial attache of the Department of Commerce in Chile writes that a firm in that country wishes to purchase an auto fire truck and desires to receive catalogues, quotations, etc., on a first class machine. The truck should be complete with a pump and engine, and equipped to carry firemen. Reference.

Trucks. No. 22,378—A firm in the United States writes the bureau that a commission merchant in Cuba desires to form commercial relations with American manufacturers and exporters of electric trucks, one to three tons capacity. The merchant wishes to act as representative. References.

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One Kind of Wildcat Competition and What Can Be Done About It.

By Elton J. Buckley.

THE question asked by the letter which I am reproducing below may arise in anybody's experience at any time. Therefore I discuss it here instead of sending a personal answer, withholding the writer's name and address as he requests:

We present below a situation on which your opinion is desired.

A, a patentee, is manufacturing and selling, through the jobbing trade, a device on which he has spent several years' time and considerable money in creating a demand and building up a business to the point of reasonable profit. He now has a line of jobber customers covering practically the entire field in which the device may be sold. This field, however, is limited and the article a "short season" one and A can easily supply the entire demand, which makes a fairly good business for one firm.

At this point B enters the field, copies A's device, makes it with less care and less taste and goes after A's customers, offering to supply them at a lower price, and is meeting with some success, to the serious injury of A's business. As B's device looks exactly like A's, it is, of course, being sold solely on the reputation of A's product. As no change in illustration is necessary, the same cuts which the jobbers used for A's device (electrotypes for which were furnished by A) are being used in some instances, at least, for the sale of B's.

A notified B that he was infringing his patent. B replied in a rather defiant manner, but on being threatened with a suit, promised to discontinue the manufacture of the alleged infringing device. After one year A discovers that B continued the sale of the device in question, and in the meantime, with the assistance of a patent attorney, has devised certain minor and unimportant changes in the structure in an effort to avoid the claims of A's patent. B now cheerfully informs A that his patent attorney advises that the device as now constructed avoid the claims of A's patent. These slight changes have apparently been made with a view of retaining the essential features and general likeness to A's device in order, as seems evident, that it may pass in the trade as substantially the same thing. The same cut or illustration will still answer for both.

One of the slight changes which B made seriously impairs the efficiency of the device, but his change cannot be determined with the eye, nor can the user determine the cause of the inefficiency without considerable intelligent study of the mechanical construction. Now, if B is permitted to continue in his course his device will still pass in the market as substantially A's product, and the sales made will be solely on the reputation of A's device. Thus B is not only practising a deception on the trade and the consumer, but this deception will, as a matter of course, eventually affect the reputation of A's device.

As a last resort A will certainly bring suit for infringement, as his patent attorney believes the changes in structure are "colorable" only and do not depart from the spirit of the invention.

We have gone into this in detail because there seems to be other questions involved than those of technical patent law, and on which your opinion is desired, viz.:—

Mr. Buckley is a member of the bar in the state in which he is resident and is counted among the leading members of his profession. In addition to contributing a special article of general interest each month he will answer any special question which a subscriber may desire information upon, either by mail or through the columns of this department. It is essential that the inquirer sign his name to each inquiry, but only the initials or a pseudonym will be published. The service is free of charge to subscribers. Inquiries should be addressed to the Legal Department, Accessory and Garage Journal.

In the meantime, what may A do to combat this competitor, if such he may be called, and to prevent the ruin of his business before the final termination of a suit? What may A say to his customers, whom B is endeavoring to draw away, in regard to this bold invasion of his rights? What may he say of the deception in B's device?

Your recent articles would seem to indicate that it might be unsafe for A to do or say anything other than bring a suit, and even in this event, should he fail to sustain the charges, he might be subjected to a suit for damages in return. Personally, we believe in a case like the above the law would permit or give A considerable latitude in combating such a bold invader.

The question is, what can A do to save his business here? Is he helpless? Must he await the long and uncertain process of the courts, with B meanwhile going ahead and stealing his trade, or is there some quick and effective method by which he can settle the matter, or at least prevent B from doing any more harm until it is settled?

As bearing upon the lengths to which competition can legally go, the question is interesting.

What I should do if I were A, and were confronted by wildcat competition of this sort, is this:

I should at once institute suit against B in the United States courts of his district. This will not be cheap or easy, but it will probably be worth all it costs. I should ask for a preliminary injunction against him on the two-fold ground that he is infringing upon my patent, and that he is guilty of unfair competition. From the above statement of facts there is plenty of ground for an injunction, which if the court grants it, will peremptorily stop B, and indirectly all of his customers, from selling B's device until the suit is decided. My judgment is that the court would very likely grant it, under the circumstances above set forth, if they can be proven.

Unfair competition, which may exist even if there is no infringement of patent, lies in the attempt B is evidently making to get the benefit of A's work—to palm off his own device as A's.

A will either get a preliminary injunction or he will not. If he is refused it, he may still get a permanent injunction, when the case comes on for final hearing, which will not be, however, for several weeks. He will get the preliminary injunction, if at all, within a few days.

Whether he gets the preliminary injunction or not, the next step ought to be to go straight to every customer with a fair story of the controversy. If he has the injunction he can of course say he has it. If he hasn't it yet, he can say he has applied for it. And he can state the facts of the dispute, fully and fairly. A United States court, in a case recently decided in Indiana, enjoined the defendant from sending notices to the trade accusing a competitive article of being an infringement, the evident object being to destroy the competitor's trade. This decision does not go so far, however, as to forbid every merchant or manufacturer who considers himself aggrieved and who is obliged to go to law to redress his wrongs, from telling his customers about it. On the contrary, he can undoubtedly tell them with perfect legality about it. Any man who is facing competition of this sort, which he believes to be in a sense fraudulent, can go straight to his trade and state his side. He can do it by word of mouth, or by letter, or by advertising, or in any other way, and no action for damages can successfully be brought against him—if what he says is true and is said in good faith. That is the only chance he takes—he may be compelled to prove the truth of what he has said and its good faith. If he can do that he is safe.

It seems reasonably clear, if B has a preliminary injunction granted against him, and the trade is then completely covered by A's statement, that a crimp will be put in B's business which will practically eliminate him. And if A's statement is true, very properly. There is no remedy so speedy and effective as the injunction in cases where competitors are either infringing on some patent or trade mark right, or are indulging in unfair competition. Through an injunction the United States government reaches out its hand and seizes by the throat the business man who has not been willing to play the game fairly. It is expensive, but if you have good grounds for it, you will always find that it pays.

(Copyright, July, 1916, by Elton J. Buckley.)

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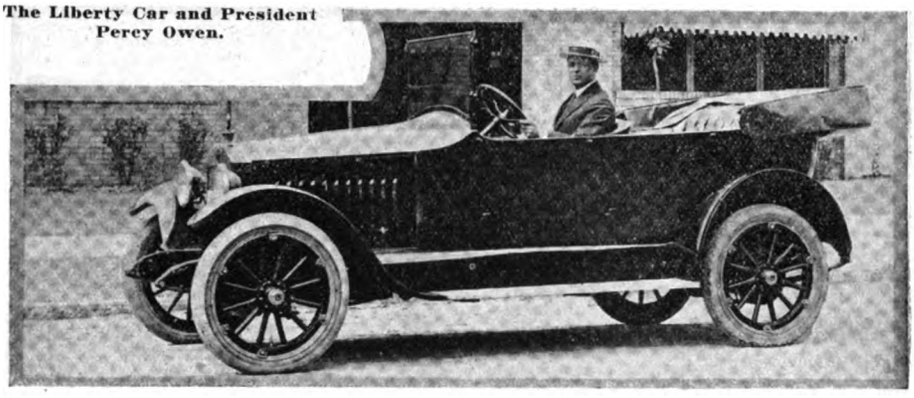
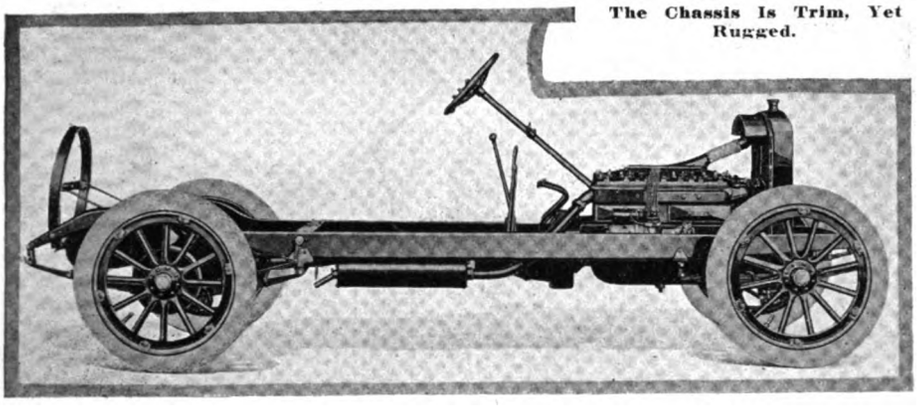
Specifications of the Five-Passenger Six-Cylinder Liberty Six for 1917



The Liberty Car and President Percy Owen.



The Chassis Is Trim, Yet Rugged.

The Liberty Six, Manufactured by the Liberty Motor Car Company, Detroit. Price, $1095. Complete Description in The Automobile Journal, Aug. 25, 1916.

Motor, Six-Cylinder, Block Casting.
Make of Motor, Continental, L Head.
Bore and Stroke, 3⅛ by 4½ Inches.
Horsepower, 23.4 (S. A. E. Formula.)
Lubrication, Splash and Forced Feed.
Cooling, Thermo-Syphon System.
Capacity of System, 6¾ Gallons.
Ignition, Delco Installation.
Carburetor, Rayfield Automatic.
Fuel Feed, Vacuum, Special Tank.
Starting and Lighting, Delco Two-Unit.
Clutch, Three-Disc Dry Plate.
Gearset, Three-Speed Selective.
Rear Axle, Timken Half-Floating.
Rear Springs, Semi-Elliptic Underslung.
Wheelbase, 115 Inches.
Tire Sizes, 32 by 3½ Inches.

NEW CONCERNS RECENTLY INCORPORATED.

Monthly Record of New Business Houses for which Charters Have Been Issued In the Various States and Classified According To Nature of Business.

This department is an important summary of the concerns which have received charters in the various states to conduct businesses that have direct relation with the motor vehicle industry. In each instance the amount of capitalization is given, when such information is available, the names of the individual incorporators and the nature of the business to be conducted.

Dealers In Automobiles and Motor Trucks.

Chicago, Ill.; Crescent Motor Car Company; $500,000; to deal in automobiles.

Mount Vernon, Ill.; Williamson Auto Company; $2500; Thomas B. Williamson, Charles H. Dumpid, Orley T. Ham.

Kokomo, Ind.; The Progressive Motor Car Company; $50,000; J. L. Sterling, E. X. Teter, Charles S. Goodfellow.

Louisville, Ky.; Columbia Motor Truck Company; $10,000; F. R. Hodapp, H. E. Miller, J. L. Savior.

Nicholasville, Ky.; Nicholasville Motor Car Company; $2000; A. L. Wilder, W. D. Harris, W. P. Harris.

Pittsfield, Mass.; Smith & McCarthy, Inc.; $10,000; to deal in automobiles: Andrew A. Smith, Martin C. McCarthy, Nora F. Cunningham.

Kansas City, Mo.; Kansas City Oakland Automobile Company; $5000; E. W. and Ottor M. Arrasmith, W. E. Myers.

Kansas City, Mo.; Midwest Haynes Automobile Company; $10,000; Orville C. Van Noy, Harry A. Cook, F. D. Glore.

St. Louis, Mo; Scudder Motor Truck Company; $10,000; Clifton R. Scudder, Charles M. Polk, L. H. Amrine.

St. Louis, Mo.; Bilgere-Kavanaugh Automobile; $5000; to engage in the general business of dealing in automobiles; George A. Bilgere, Edward P. Wachter, J. Boggs.

Newark, N. J; The H. B. Coen Company; $15,000; to deal in automobiles; H. B. Coen.

Plainfield, N. J.; M. & L. Auto Company; $25,000; to deal in automobiles and accessories; Robert C. McIntosh, Norman D. Loughlin, Robert N. Crane.

Brooklyn, N. Y.; McFarlan Motors Brooklyn Corporation; $10,000; to deal in autos and to conduct a garage; M. Hertz, K. C. Arluck, F. Solinsky.

Brooklyn, N. Y.; F. C. Stowers, Inc.; $5000; to deal in autos at retail; E. L. Rotheim, D. R. Bernstein, I. S. Kutch.

Brooklyn, N. Y.; Stephens' Service Stations, Inc.; $10,000; to do an automobile business; Benjamin F. Stephens, Violet C. Stephens, George Baur.

New York, N. Y.; Layman-Lowy Motor Car Company, Inc.; $5000; to deal in motor cars and steel products; C. R. Rubinstein, W. S. Horton, M. C. Meyer.

New York, N. Y.; May Garage Company, Inc.; $25,000; to deal in autos, motors, engines, machinery and tires; F. M. and M. E. Franklin, C. E. Monroe.

New York, N. Y.; Mitchell Motors Company; $500; to deal in motor cars, engines; T. Achenbach, J. H. Keim, F. S. Crostry.

New York, N. Y.; White Motor Sales Company; $50,000; to buy, sell and deal in automobiles, tires and accessories.

Rochester, N. Y.; Automobile Tractor and Truck Sales Corporation; $25,000; to deal in automobiles, tractors and trucks; M. Wahl, J. Collins, H. J. Schwalb.

Chillicothe, O; The Arbenz Motor Car Company; $1,000,000; M. F. McFadden, E. C. Spader, M. C. Hayes, W. J. Purcell, R. L. Pillars.

Hamilton, O.; The Vail-Rentschler Tractor Company; $100,000; J. A. Vail, G. A. Rentschler, C. B. Wing, Gordon S. Rentschler, Samuel C. Vail.

Toledo, O.; F. R. Mitchell Company; $25,000; F. R. Mitchell, W. B. Morgan, Stanley J. Heitt, C. B. Hughes, H. A. Kesler.

Toledo, O.; Oilar-Overland Company; $10,000; to deal in motor cars; Howard Lewis, Elizabeth H. Watson, S. A. Carter, Frank S. Lewis.

Youngstown, O.; Mahoning Motor Company; $20,000; to deal in automobiles and accessories; R. H. Rogers, Myron De Venne, A. O. Fleming, P. H. Stambaugh, Louis S. Baldwin.

Oklahoma City, Okla.; Reneau Motor Car Company; $15,000; H. W. Reneau, E. A. Watkins, J. M. Kirkwood.

Philadelphia, Penn.; Herbert Cook Company; $10,000; Walter G. Herbert.

Newberry, S. C.; The Carolina Auto Company; $10,000; C. T. Summer, president and treasurer; J. W. Smith, Jr., vice president and secretary.

Memphis, Tenn.; Union Motor Car Company; $40,000; J. T. Fisher, L. M. Stratton, B. A. Bogy, M. E. Finch, Jack W. Gates, R. E. Spicer, W. M. Busteed.

Dallas, Tex.; Texas Oakland Company; $60,000; to buy and sell automobiles; George P. Miller, C. L. Zutavern, J. M. McCormick, French Davis.

Waco, Tex.; Herrick & McLarty Auto Company; $30,000; F. E. McLarty, W. T. Herrick, T. D. Humphrey.

Pocahontas, Va.; The Southwest Motor Car Company; $5000; W. K. Maxey, J. R. Black.

Huntington, W. Va.; The Live Avery Motor Car Company; $10,000; to deal in automobiles; H. E. Love, Harrison Lamb, P. E. Avery.

Madison, Wis.; The Briscoe Company of Wisconsin; $50,000; F. Glenn, W. Stephens, Ethel Lee, Louis C. Horner.

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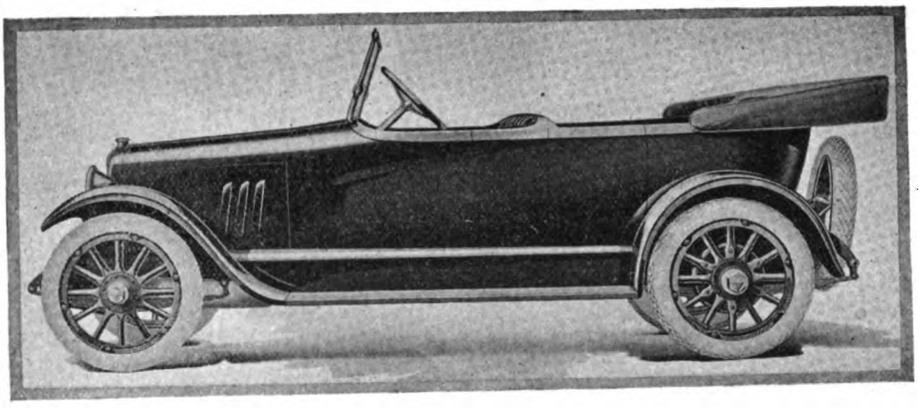
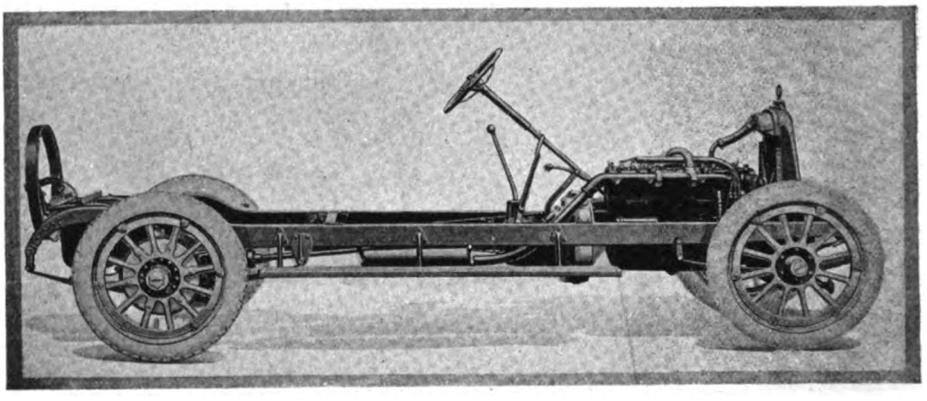


Bour-Davis Six A Distinctive Car with Luxurious Coach Refinements.

The Bour-Davis Six, Manufactured by the Bour-Davis Motor Car Company, Detroit. Price of Touring Car, $1250; Enclosed Body, $1500. Complete Description in The Automobile Journal, Sept. 10, 1916.

Motor, Six-Cylinder, Block Casting.
Make of Motor, Continental Model 7W.
Bore and Stroke, 3¼ by 4½ Inches.
Horsepower, 25.4 (S. A. E. Formula).
Lubrication, Splash and Forced Feed.
Cooling, Pump Circulation.
Ignition System, Remy.
Carburetor, Stromberg Horizontal Outlet.
Fuel Feed, Stewart Vacuum.
Starting and Lighting, Ward-Leonard.
Clutch, Borg & Beck Disc.
Gearset, Three-Speed Selective.
Rear Axle, Three-Quarter Floating.
Rear Springs, Semi-Elliptic Underslung.
Wheelbase, 118 Inches.
Tire Sizes, 32 by Four Inches.



Parts and Fittings Makers Incorporated.

Dover, Del.; Parker Collapsible Rim Corporation; $5,000,000; to deal in and with rims and parts for automobiles and other vehicles; Lawrence Angel, S. S. Lesser, Louise Franklin.

Atlanta, Ga.; R. & W. Appliance Company, Inc.; $100,000; W. C. Rentz, Jr., F. Austin Abbott, George R. Pace.

Pocatello, Ida.; Triangle Motors Company; $25,000; H. H. Kurtz, K. K. Kingsbury, N. D. Keye, T. E. Branen, B. A. Cummings.

Chicago, Ill.; Standard Auto Starter Company; $10,000; Harry Bierma, Elmer Schmuck, George W. Ingrish.

Des Moines, Ia.; The Taylor Motor Company; $30,000; L. W. Taylor, president; C. W. Payne.

Boston, Mass.; Nalilik Motor Signal Company; $500,000; J. Killian, William E. Killian, Oscar E. Perrigo.

Springfield, Mass.; Williams Motor Sales Company; $10,000; Helena C. Williams, Agnes Vogel, Philip A. Williams, Jr.

Springfield, Mo.; Overland-Springfield Motor Company; $10,000; to buy, sell and repair motor vehicles of all kinds; W. A. F. and Willis W. Lennhard.

Omaha, Neb.; The Efficiency Motor Device Corporation; $25,000; William G. Brunke, Harry Don Clarke, Alexander F. C. Schnoor, Otto Thompson.

Newark, N. J.; Daniel Delaney & Son; $125,000; to manufacture truck and motor car springs.

Trenton, N. J.; Para Company; $10,000; to deal in automobile parts; S. Roy Heath, Harold S. Maddock, Irving L. Wright, George W. Pearson.

New York, N. Y.; Batt Motor Axle Company; $100,000; to deal in motors and axles; J. McCormick, J. C. Snyder, C. F. Batt.

New York, N. Y.; Car Sales Company; $10,000; Percy J. Smith, Wilson P. Marchbank, Ira J. Stork.

New York, N. Y.; Consolidated Auto Radiator Manufacturing Company; $1,500,000; John J. McGovern, J. L. Sullivan, George Kuntzman.

New York, N. Y.; Cross Port Motor Company, Inc.; $100,000; to manufacture internal combustion motors, engines and motor car patents; E. J. O'Connell, J. S. Casey, J. J. O'Connell.

New York, N. Y.; Crown Motors Corporation; $50,000; John F. O'Neill, David D. Vincent, Jean C. Franklin.

New York, N. Y.; Kohn Delivery Contracting Company, Inc.; $15,000; to deal in motors, autos, cars and horse drawn vehicles; H. and S. Kohn, M. Corin.

New York, N. Y.; Pyro Ignition Company, Inc.; $20,000; to manufacture spark plugs; Charles R. Allison, W. Irving Glover, Claude C. Pinney.

New York, N. Y.; Victor Motor Company; $2,000,000; to manufacture all kinds of motors and engines.

New York, N. Y.; Warner-Lenz Sales Company; $25,000; to deal in automobile lenses; H. K. Lebeck, H. Ruben, A. T. Wregg.

Rochester, N. Y.; Rochester Ball Bearing Company, Inc.; $5000; to manufacture ball bearings and other parts for motors, machinery; Joseph B. Robinson, Carl M. Weber, George C. Hannemann.

Ashley, N. D.; Dakota Motor Sales Company; J. C. Gall, Henry Jerks, F. J. Bodman.

Cincinnati, O.; Murray Auto Parts Manufacturing Company; $25,000; William J. Murray, Victor E. Murray, H. J. Muman, S. E. Daughster, Edwin J. Kennedy.

Cleveland, O.; The Craig Motor Company; $15,000; George E. Bradbury.

Cleveland, O.; A. I. Englander Motor Company; $25,000; Fred Deeberg.

Toledo, O.; The Garford Motor Truck Sales Company; $10,000; A. G. H. Jenssen, W. L. Parmeter, H. E. Myers, E. F. Sayers, W. W. Smith.

Philadelphia, Penn.; The K. G. Motor Device Company; $50,000; to engage in the manufacture and sale of K. G. decarbonizer, speeder and economizer; Charles T. Tabrera, E. A. Smith, D. Ross.

Lawrenceville, Va.; Brunswick Motor Company; $10,000; T. C. Coleman, E. W. Ligon.

Norfolk, Va.; Coburn Motor Sales Corporation; $50,000; T. Gray, J. T. Darden.

Richmond, Va.; Amco Motor Company; $500,000; A. M. Wolf, A. F. Hansl.

Milwaukee, Wis.; Wisconsin Magneto Exchange Company; $11,000; Adolph Grauer, August D. McIntyre, Nomene McIntyre.

Newly Organized Manufacturers of Cars.

Laurel, Del.; Marvil-White Company; $25,000; to manufacture automobiles and to operate garages.

Wilmington, Del.; The Blackstone Motor Company; $100,000; to manufacture automobiles and accessories; M. L. Rogers, L. A. Irwin, Harry W. Davis.

Wilmington, Del.; Convolute Springs Company; $10,000; to manufacture and sell automobiles; W. F. O'Keefe.

Portland, Me.; Campbell Transmission Company; $250,000; to manufacture and deal in transmission gears and automobile and machine parts; Albert F. Jones, A. B. Farnham, George S. Soule.

Butte, Mont.; The Wheeler Overland Company; $20,000; to manufacture and sell automobile parts and accessories; I. M. Wheeler, G. W. Stapleton, F. A. Sherwood.

Elizabeth, N. J.; Pfeiffer Motor Car Company; $50,000; to manufacture and deal in motor vehicles, engines and machinery; H. S. Pfeiffer, John Tucker, R. H. McAdams.

Newark, N. J.; Phinna Motors Company; $500,000; to manufacture and deal in autos and motors; William S. Butler.

Manhattan, N. Y.; Crow Motor Sales Company; $25,000; to manufacture autos, parts and accessories; J. A. Jennings, C. Burgess, A. L. Goodby.

Maplewood, N. Y.; Gardner Taxicab Company; $50,000; to manufacture and deal in motor cars; Isabel S. Miller, W. W. Jones, Warren Gardner.

Millbrook, N. Y.; Fisher Body Corporation; $7,000,000; to manufacture auto and carriage bodies; L. Mendelsohn, F. J. Fisher, R. J. Trimble.

Morristown, N. Y.; J. H. Priestman, Inc.; $500,000; to manufacture and deal in automobiles; J. Priestman, T. J. Leavey, J. A. Ryan, William H. Hoag.

Greensboro, N. C.; Carolina Motor Equipment Company; $25,000; to distribute, buy and sell vehicles of all kinds and to deal in automobiles, motorcycles; J. A. Mathewson, J. B. Harrison, J. B. Booth, E. C. Klingman.

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Garages and Repair Shops Newly Chartered.

Los Angeles, Cal.; The Bay Cities Garage; $25,000; David J. Evans.

Chicago, Ill.; The Chain Garage Company; $12,000; Edward C. Kesler, Alex M. Golman, I. F. Reddy.

Evansville, Ill.; The Universal Garage; $1000; M. L. Wolff, Leo N. Wolff.

Anderson, Ind.; The Palace Auto Company; $10,000; to operate the Palace Garage at the corner of 14th and Meridian streets; R. S. Gilmore, R. K. Gwinn, W. G. Simmerman.

Indianapolis, Ind.; Carver-Gregory Garage Company; $5000; Edwin Carver, M. Gregory, G. G. Gregory.

Stanford, Ky.; Bailey Garage Company; $1800; H. L. Bailey, J. H. Warner, R. L. Collier.

Rockland, Me.; Central Garage; $10,000; V. C. Lambert, A. F. Lambert, Gilford B. Butler.

Elizabeth, N. J.; The North End Motor Corporation; $5000; to operate garages; Harry B. Beltz.

West Hoboken, N. J.; The West Hoboken Garage, 1776 Hudson boulevard; $5000; to deal in automobiles and boats.

Jamaica, N. Y.; The Jamaica Auto Garage; $10,000; J. Lewis, Maurice F. Miller, Lillian Lowey.

New York, N. Y.; The Bayside Garage; $5000; S. E. Hahn.

Chester, Penn.; Mee-tu Tire and Rubber Company; $5000; G. G. Meeley.

Philadelphia, Penn.; West Philadelphia Garage; $5000; C. E. Wiley.

Nacogdoches, Tex.; Nacogdoches Garage Company; $10,000; N. J. Schmidt, Greer Orton, Ben T. Wilson.

Morgantown, W. Va.; The Bishop Garage and Supply Company; $10,000; F. C. Bishop, H. T. Rankin, E. P. Toynber, Fred C. Flenniken.

Unclassified Incorporations Recently Made.

Washington, D. C., Rappahannock Jitney Bus Company; $5000; J. Edward Thornton, Alice Clark.

Perry, Ia.; L. & M. Filter Company; $25,000; Howard Moody, Alfred Logsdon, W. A. Petty, James S. Bennett, J. I. Kelly, George I. Birdsall, Vernon Council, F. M. Hazlett, Louis Crist, H. M. Pattee, W. H. Pattee, N. M. Repp.

Topeka, Kan.; American Auto Indemnity Company; I. A. Lower, J. C. Helbert, F. L. Ebey, W. T. Lawless, James Wall, C. J. Peterson, John E. Barrett.

Mt. Sterling, Ky.; Mt. Sterling and Lexington Transportation Company; $1500; R. R. Stone, H. M. Wyatt.

Portland, Me.; Maine Auto School Company; $5000; Horatio Q. Wheeler, Frederick R. Lewis, Wadleigh B. Drummond.

Worcester, Mass.; Worcester Buick Company; $25,000; Chester M. Stanley, Redney G. Clark, Harry K. Noyes.

Detroit, Mich.; Motor Horse Company; $100,000; Sidney B. Winn, Patrick J. Power, August J. Bloom.

Grand Rapids, Mich.; Auto Light Control Company; $25,000; Marshall D. Elgin, Andrew A. Flory, Umphrey H. Davenport.

Kansas City, Mo.; A. B. D. Company; $50,000; A. W. Zylor, K. L. Day, M. E. Groom.

Albany, N. Y.; National Car Owners' Association, Inc.; $50,000; users of automobiles for development and protection; S. Saulpaugh T. Fitzgerald, T. T. Bissell.

Bronx, N. Y.; C. D. Ford, Inc.; $2500; Ira Skutch, David R. Bernstein, Etta L. Rothein.

Cleveland, O.; The American Auto Trimming Company; $100,000; Benjamin Gotfredson, Frank Joyce, G. A. Coulton, F. W. Treadway, William H. Mariatt.

Cleveland, O.; The Elyrie Home Building Company; $10,000; W. C. McClure.

Youngstown, O.; The Henderson Overland Company; James A. Henderson, A. G. Maguire, William Henderson, William E. Hill.

Johnson City, Tenn.; Johnson Transportation Company; $1500; to establish a transportation line of automobiles to transport freight and passengers; A. W. Johnson, C. A. Johnson, J. L. Wade, B. W. Bell, L. F. Miller.

Nashville, Tenn.; R. M. Rust Company; $2500; Joseph A. DeMatteo, Phil Hirsch, Rosa May Rust, H. F. Galloway, T. E. Vaughn.

Dallas, Tex.; American Junk Company; $5000; Moses Feldman, Barnett Tcatch, A. Z. Goldstein.

San Antonio, Tex.; San Antonio Buick Company; $10,000; H. H. Bryant, L. J. Hausmann, E. T. Elmendorf.

Milwaukee, Wis.; Saxon Reynolds Company, Inc.; $25,000; C. C. Russell, C. W. Reeber, H. J. Droppers.

Accessories, Equipment and Supplies.

Macomb, Ill.; Irwin-Overland Company; to conduct a sales agency and to deal in accessories; Leaton Irwin, C. L. Harrah, W. W. Faries, C. E. Asher.

Indianapolis, Ind.; The Universal Motor Products Company; $100,000; S. N. Chambers, R. F. Davidson, Allen P. Vestal.

Greensburg, Ind.; Globe Accessories Company; $100,000; John W. Judkins, Richard E. Edwards, L. W. Gillespie.

Kansas City, Mo.; M. & P. Puncture Proof Tire Sales Company; $10,000; C. C. Merchant, F. W. Patrick, A. F. Dimmitt.

Manhattan, N. Y.; Carnegie Tire and Rubber Company, Inc.; $25,000; to deal in tires, rubber goods and merchandise; B. J. Reynolds, V. W. Fink, W. H. Dodd.

New York, N. Y.; New York Auto Equipment Company, Inc.; $5000; Paul M. Pelletreau, David J. Wagner, C. M. O'Farrell.

New York, N. Y.; Pennsylvania Rubber Company, Inc.; $6,000,000; to manufacture tires and rubber goods; Seneca G. Lewis, H. W. Dupuy, G. A. McLaughlin.

New York, N. Y.; Tire Company of Baltimore, Inc.; $100,000; general tire manufacturing business; S. Bernheim, C. A. Weldon, H. H. Jacobson.

New York, N. Y.; United American Motorists, Inc.; to deal in automobile supplies; John E. Lowe, Clement Lewis.

Utica, N. Y.; H. V. P. Motor Sales, Inc.; $15,000; to deal in automobile accessories; G. D. Vincent, E. B. Hague, R. F. Payne.

Thomasville, N. C.; The Ford Sales Company; J. E. Wortman, Sidney Allen, I. L. Sink, M. N. Hoyle.

Cleveland, O.; The Savage Auto and Repair Company; $5000; W. C. Davies, H. D. Savage, Walter McMahon, Marcus Cohen, M. J. Rowan.

Youngstown, O.; The Clark Auto Tire Company; $5000; Helen H. Clarke, Caroline S. Bonnell, Charles A. Bonnell, Archibald Clarke, Talcott H. Clarke.

Clarksburg, W. Va.; Auto Storage and Supply Company; $10,000; to deal in and hire autos; W. A. Gaylord, Grace M. Gaylord.

NEW CONCERNS AND CHANGES

General News Regarding Transfer of Ownership and Opening of Garages and Agencies and Changes of Names.

The following data relate to the establishment of new concerns, including agencies, garages, branches, service stations, repair shops, etc., and from valuable information. Herewith is also recorded the recent changes of names of business concerns in the industry and allied lines, and the transfers of ownerships of businesses. The record includes all the states and is classified for convenience.

Recent Transfers of Business Ownerships.

Redondo, Cal.; Venable & Anderson have purchased the garage formerly operated by the Taggart Motor Company. The Taggart Motor Company has moved to Anaheim, Cal., where a large two-story brick garage is being erected.

Hartford, Conn.; The Hartford-Apperson Motor Company, 284 Main street, has taken over the Peerless Garage, 278 Main street, and will conduct it as an Apperson and Inter-State service station.

Bushnell, Ill.; D. Simonson has sold his interest in the automobile business of Simonson & Sperry.

Champaign, Ill.; Ray C. Sparks has purchased an interest in the Herrick Automobile Supply Company and will take an active part in its management. The company is preparing to establish branches through central Illinois.

Kenney, Ill.; C. C. Sheridan has disposed of his garage and automobile accessory business to Howard E. Barclay of Lincoln. He will continue as agent for the Jeffery car and in the wholesale oil business.

Algona, Ia.; F. A. Corey has sold his auto business to Clyde Shipler.

Ames, Ia.; P. Mathre has bought the garage and accessory business of Lew Robertson.

Newton, Ia; Brodersen Brothers succeeds to the Court Street Garage, formerly conducted by Mortensen & Brodersen.

Oskaloosa, Ia.; The Lewis Brothers Company has taken over the interests of the Schee Company, now of Des Moines, including the Packard and Buick agencies.

Pratt, Kan.; The Pratt Motor Company has bought out J. W. Farmer, who had the Ford agency.

Malden, Mass; The Malden Garage on Eastern avenue has been purchased by G. F. Lombard & Son. The Malden Garage was formerly operated by Williams Brothers.

Medford, Mass.; The Fellsway Garage has been purchased by George F. Lombard & Son.

Benton Harbor, Mich.; The Maxwell Garage, which has the agency for the Maxwell and Oakland, has been taken over by C. G. Madson.

Grand Rapids, Mich.; H. F. Abbott has purchased the Co-Operative Garage at 1256 Division avenue.

Grant, Mich.; The Seman Garage has been purchased by Glenn Bullman. George Bishop, former proprietor, will retire from the garage business.

Sault Ste. Marie, Mich; A. E. Runnels has disposed of his livery business. The Chipewa Automobile Company has taken over the former barn and will have it remodeled and use it as a garage.

Morenci, Mich.; Robert Jones is now sole owner of the Deline & Jones Garage, having bought out the interest of his partner.

Kimball, Minn.; William French has bought the R. J. Bergum Garage.

Lake Crystal, Minn.; W. F. Thomas has bought the Johnson Brothers' Garage.

St. James, Minn.; Lloyd Rowland has bought the O. J. Bjorkman vulcanizing plant.

Tracy, Minn.; Leonard Nelson has bought the Ford garage and agency from Neil Nelson.

La Plata, Mo.; Sloan & Turley Brothers have retired from the motor car business and have leased the new building they occupied to the La Plata Auto and Supply Company. The new firm has added storage, battery, repair and recharging departments.

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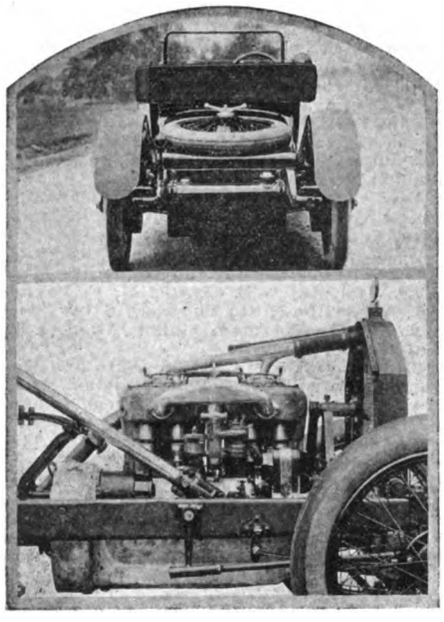
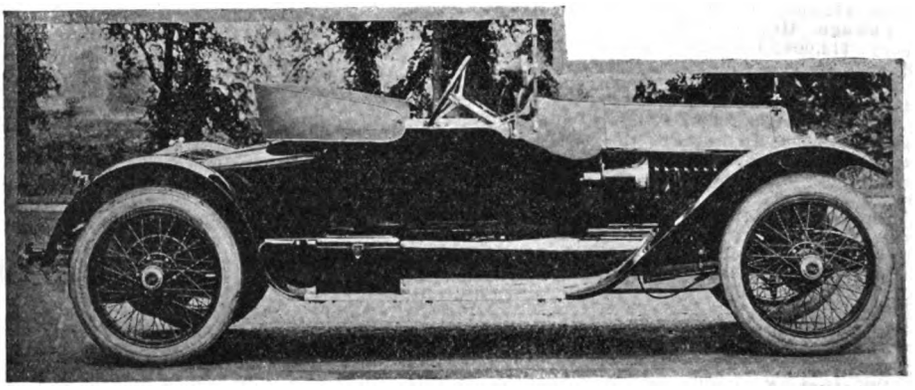
Stutz Announces the New Series "R" for 1917.





Four-Cylinder Stutz Roadster, Manufactured by the Stutz Motor Car Company, Indianapolis, Ind. Price, $2275. Price of Bulldog Specials, $2550. Complete Description of Three Models, Constituting Series, in The Automobile Journal, Sept. 10, 1916.

Motor, Four-Cylinder, in Pairs.
Shape of Motor, T Head, Enclosed Valves.
Bore and Stroke, 4¾ by 5½ Inches.
Horsepower, 36.1 (S. A. E. Formula).
Lubrication, Forced Feed and Splash.
Cooling, Pump Circulation.
Ignition, Bosch Magneto.
Carburetor, Stromberg Model H-3.
Fuel Feed, Gravity.
Starting and Lighting, Remy.
Clutch, Leather Faced Cone.
Gearset, Three-Speed Selective.
Rear Axle, Three-Quarter Floating.
Rear Springs, 56-Inch Semi-Elliptic.
Wheelbase, 130 Inches, All Models.
Tire Sizes, 34 by 4½ Inch, Wire Wheels.

St. Joseph, Mo.; Van Agee has purchased an interest in the Limpp Garage at King City, Mo., and will move to King City. The name of the firm will be Limpp & Agee.

Louisiana, Mo; The Backer-Overland Auto Company has discontinued the automobile business.

Ashton, Neb; Harmenza Brothers have bought and taken possession of the Ashton Garage.

Culbertson, Neb.; Hein Brothers has disposed of their garage to Mohr & Ehler, who have taken possession.

Falls City, Neb.; John Deff has sold his garage business to a company in Brock, Neb.

Gordon, Neb.; James Maddox has sold his interest in Parker & Maddox to his partner and retired from the business.

New York, N. Y.; Max Greenburg has purchased a plot 50 by 100 feet at East 85th street. He will build a garage.

New York, N. Y.; The Wire Wheel Service Station is under the management of A. C. McDonnell and has opened at 103 West 62nd street. The company will make a specialty of wire wheel repairing.

Rolette, N. D.; Helmer Mellum has bought an interest in the Rolette Garage and the firm will be Christianson & Mellum.

Velva, N. D.; The Velva Auto Company has been sold to John F. Warner of South Prairie, N. D.

Columbus, O; The Coliseum, located at Fourth and State streets, has been purchased by David C. Beggs and John D. Karns and will be remodeled into a modern garage.

Toledo, O.; The Toledo Central Garage Company has purchased the stock of Oakland and Hollier cars from the Toledo Auto Sales Company and will operate the business.

Oklahoma City, Okla.; The Auto Service and Storage Company on West Second street is now under the management of W. T. Stevenson and F. M. Becker.

Nashville, Tenn.; King Sparks has bought the local agency of the Smith Form-a-Truck from the Central Garage and Sales Company.

Newport News, Va.; The J. P. Gayle Supply Company, 2608 Huntington avenue and 308 27th street, is going out of the harness and carriage business and will devote its entire time to the wholesale and retail automobile accessory business.

Darlington, Wis.; C. A. Pope has sold his repair shop to J. W. Wilkinson.

Watertown, Wis.; Whitmore & Persson, operating a garage in First street, have dissolved partnership. Mr. Persson has retired.

Agencies, Dealers and Service Stations.

Hot Springs, Ark.; S. Nutt has completed his new garage, which will be known as the Overland Garage, on Central avenue. He has the agency for the Overland.

Los Angeles, Cal.; Ballard & Leaming has opened a tire store and vulcanizing plant at 745 South Los Angeles street.

Los Angeles, Cal.; Earl V. Armstrong, Inc., has secured the garage room adjoining the Chandler agency and service at 1144 South Hope street.

Los Angeles, Cal.; The Steele Motor Sales Company has secured the Southern California distribution of the Elcar line and has opened a garage and sales room at 1306-08 South Main street.

Vallejo, Cal; The Auto Storage Battery Company, 502 Capital street, has undertaken a service station for Willard storage batteries.

Macomb, Ill.; The Irwin-Overland Company has been organized to operate a sales agency and handle supplies and accessories.

South Bend, Ill.; The South Bend Auto Sheet Metal Works have opened for business on East Washington avenue. M. Lewis is owner and manager of the plant, which will specialize in the manufacture and repair of automobile radiators, fenders, gas tanks, lamps and bodies.

Elkhart, Ind.; Ingerson Battery and Service Company, 211 S. Main street, has established a service station for Willard storage batteries.

Indianapolis, Ind.; The Stutz Updyke Motor Car Sales Company has completed its new building and will handle Locomobile and Stutz cars.

Kiowa, Kan.; N. H. Cannon has opened a tire shop.

Wichita, Kan.; The Randle Motor Car Company has opened a shop and sales department at 120 South Lawrence avenue. The company is the distributor for Velie cars.

Haverhill, Mass.; Alvan T. Fuller, distributor for Packard cars, has opened a branch.

Haverhill, Mass.; The W. H. & Webster Jones Company, 10 White street, has established a service station for Willard storage batteries.

Springfield, Mass.; The Becker-Stutz Company has leased another building for a service station.

Springfield, Mass.; The Ford Motor Company has opened its new branch at 75 Liberty street.

Grand Rapids, Mich.; J. A. Staub, 127 First street, will represent Willard storage batteries.

Natchez, Miss.; Porter & Claggett store room has been completed and is now in use by the firm.

East St. Louis, Mo.; J. H. Byerly has organized the Byerly Automobile Company at 10th and State streets.

St. Louis, Mo.; The Hudson-Phillips Motor Company has been appointed Diamond T truck distributor.

St. Louis, Mo.; William B. Walsh has formed the Walsh Motor Car Company and has leased a building at 4718 Delmar boulevard. The company will carry Ford cars.

Roswell, N. M.; L. F. Woodhead, 315 N. Main street, will handle Willard storage batteries.

New York, N. Y.; The P. J. Durham Company, 344 West 49th street, representatives of the Auto-Lite Company and Gray & Davis, Inc., manufacturers of electric starting and lighting systems for automobiles, will also conduct a service station for the Willard Storage Battery Company.

Dasey, N. D.; The Duff-Barr Auto Company will engage in the implement business.

Akron, O.; The Miller Rubber Company has added another tire to its products. It is called "Adona" tread.

Columbus, O.; The Broad-Oak Automobile Company will act as central Ohio distributor for the Studebaker. The distribution of the Studebaker was formerly done by the Brasher Motor Car Company.

Mt. Vernon, O; Earl E. Dorsey has established a service station for Willard storage batteries at 18 West High street.

Oklahoma City, Okla.; The W. C. Norris Motor Sales Company has opened a sales room and service quarters at 605 West Main street, where it will handle Oldsmobile and Marmon cars for the entire state.

Providence, R. I.; The Kenworthy-Clark Company has taken over the Studebaker agency, formerly held by Charles H. Goodwin.

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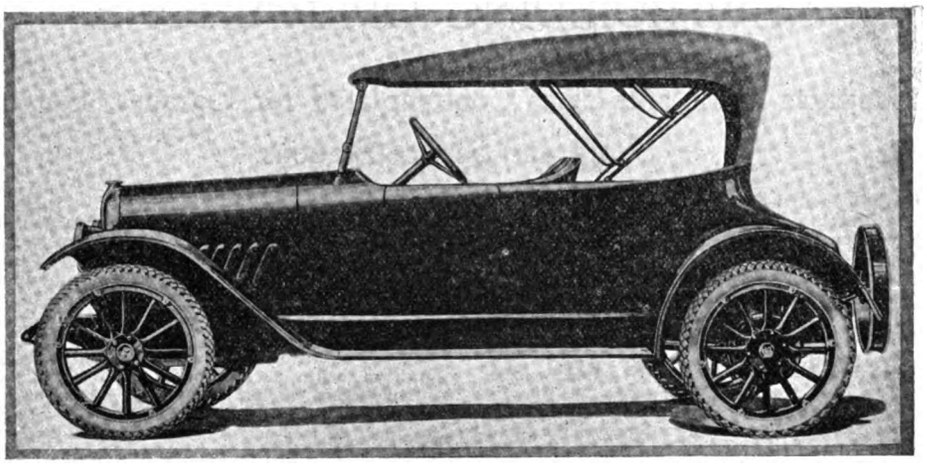
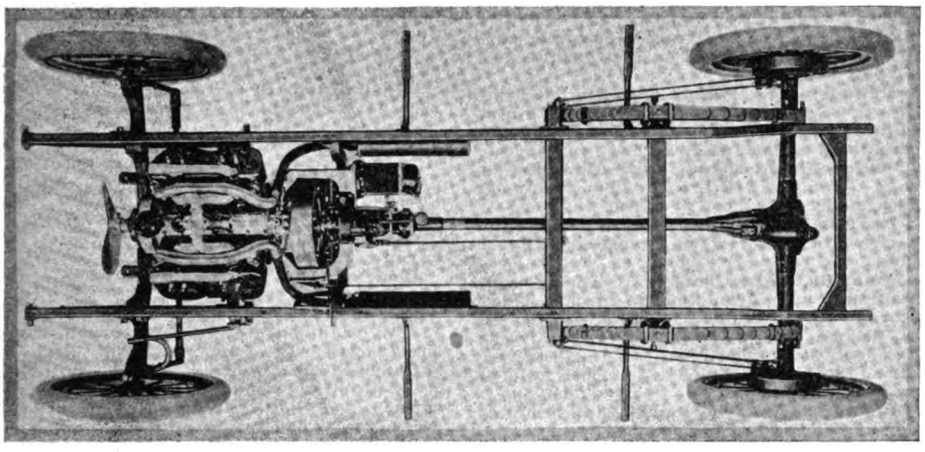
Hollier Introduces a New Six and Makes Several Refinements In the Eight Model.





The Hollier Four-Passenger Roadster, Manufactured by the Lewis Spring and Axle Company, Chelsea, Mich.; Price of Six-Cylinder Model, $1085; of Eight, $1185. Complete Description in The Automobile Journal, Sept. 10, 1916.

Specifications of the New Six.
Motor, Six-Cylinder, Block Casting.
Valves, Carried in Detachable Head.
Bore and Stroke, Three by 4¼ Inches.
Horsepower, 21.6 S. A. E. Formula).
Lubrication, Gravity and Splash.
Cooling, Thermo-Syphon System.
Ignition, Battery System.
Carburetor, Stewart Duplex.
Fuel Feed, Vacuum from Rear.
Starting and Lighting, Combined Unit.
Clutch, Leather Faced Cone.
Gearset, Three-Speed Selective.
Rear Axle, Full Floating.
Rear Springs, 42-Inch Cantilever.
Wheelbase, 116 Inches.
Tire Sizes, 33 by Four Inches, Non-Skids.

Port Arthur, Tex.; The Electric Construction Company, Proctor street, has established a service station for Willard storage batteries.

Seattle, Wash.; A. W. McKenzie, agent for the Garford truck in Washington, Oregon, Idaho, Utah and British Columbia, has opened a sales room at 1726 Broadway.

Prairie du Sac, Wis.; J. C. Haberman is installing new machine tool equipment, including boring and reaming tools, lathes and drills.

Garages and Repair Shops Newly Chartered.

Flagstaff, Ariz.; H. Jackson has opened a repair shop.

Hartford, Conn.; Kilby & Hamilton are conducting the garage at 37 Mulberry street, formerly operated by the Heublein Garage Company, which moved into new quarters at 39 Gold street.

Bloomington, Ill.; C. J. Frey has opened a new garage at 302-308 West Washington street. He will conduct a general repair business and handle accessories.

Jacksonville, Ill.; B. J. Holkenbrink has opened a garage at 216 North Main street. He will operate a repair shop, specializing in batteries and vulcanizing.

Joliet, Ill.; Woodruff Inn Garage will occupy the two-story garage at the corner of Scott and Jefferson streets when it is completed.

Knoxville, Ill.; Thomas Rebard and William Hughes have opened a garage and repair shop.

Urbana, Ill.; S. I. Benford and E. E. Householder have opened a branch garage and repair shop at Hickory and Columbia streets, Champaign, Ill.

Clarinda, Ia.; Stickleman & Whitmore have opened a garage.

Colfax, Ia.; Colfax Auto Company has opened a new garage on Front street.

Decorah, Ia.; John McCall has opened his new garage.

Emmetsburg, Ia.; Mann Auto Company has opened its new Ford garage.

Waterloo, Ia.; F. A. Houghton has opened an automobile repair shop and garage at 401 West Fifth street.

Grant, Mich.; Charles Forbes has opened a garage.

Greenfield, Mo.; T. H. Milligan has opened a repair shop in the Underwood Garage.

Kansas City, Mo.; The Auto Service Station has opened at 713 Main street.

St. Louis, Mo.; The Merchants' Truck Company has opened a garage and service station at 1111-19 North 12th street.

Bristol, Penn.; M. J. Christopher has opened a new garage at the corner of Beaver and Buckley streets. It will be known as the Imperial Garage.

New Business Locations and Removals.

Clarkdale, Ariz.; Clyde Amster and Kent Reese, proprietors of the Clarkdale Garage and Machine Shop, have moved into larger quarters and has installed new machinery.

Champaign, Ill.; C. B. Wiggins has removed into his new four-story garage building at Neil and Hickory streets and will maintain the Cadillac service station. The old quarters were found to be too small.

Burlingame, Kan.; C. E. Gardner has moved to Lyndon, Kan., and has purchased a garage.

Spring Hill, Kan.; J. E. Wilkoff has moved his garage to Overland Park, Kan.

Cedar Rapids, Ia.; The Economy Welding Company is a new concern located at 111 South Fifth street, with K. C. Saffee in charge.

Des Moines, Ia.; The Diamond Tire and Supply Company has removed to new quarters at 15th and Locust streets.

Boston, Mass.; The Pennsylvania Rubber Company is now located in its new building at 683 Beacon street.

Boston, Mass.; Philadelphia Storage Battery Company has leased a new fireproof building located at Jersey street and Brookline avenue.

Romulus, Mich.; Rev. C. S. Rennels has secured new quarters with Churchill Brothers at the Star Garage. He is the Chevrolet dealer.

Blairstown, Mo.; Teater & Delap have moved into a new garage building.

Kansas City, Mo.; The McCreary Plating and Enamelling Company has moved into quarters with the Squire Electric and Construction Company, 401 Wyandote street.

New York, N. Y.; The Sidney Bowman Automobile Company, metropolitan distributor for Oakland cars, has moved to 1632 Broadway. The company was formerly located at 1710 Broadway.

Cleveland, O.; The Hudson Stuyvesant Motor Car Company, distributor of Hudson cars, is now located in its new home at 2010 Euclid avenue.

Columbus, O.; Cooke & Co., distributors for several accessory companies, has moved its sales room from 149 North Fourth street to 168 North Fourth street.

Columbus, O.; The Kissel Service Company is now located in its new home at Fourth and Spring streets.

Columbus, O.; The Ohio Tire Service Company has moved from its former location, 241 North Fourth street, into larger quarters at 70 North Fourth street. J. C. Henne is manager of the concern.

Columbus, O.; Wilbur Winders, distributor of the Velie and Chevrolet, will move into new quarters at 180-182 East Long street.

Tulsa, Okla.; The Electric Storage Battery Company will occupy new quarters at Seventh and Main streets, which is now under construction.

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NEW BUILDING OPERATIONS.

Contracts Made and Plans Contemplated for Garages, Repair Shops and Service Stations.

In this department is presented a record from the various states of the plans and specifications in course of preparation by individuals and concerns, of the contracts awarded for the erection of new garages and the like, of additions, improvements and alterations either already made or under consideration, and of the business removals and new locations that have taken place within the past month.

Factories, Garages and Repair Shops.

Jacksonville, Fla.; Robert J. Holland will erect a new modern garage at a cost of $25,000.

Chicago, Ill.; Lawler Brothers will erect a new three-story service station on Lafayette avenue. It will be modern. The company has the agency for the Ford cars.

Chicago, Ill.; Frederick Vezteen, 4215 West End avenue, will erect a modern garage to cost $7000.

Joliet, Ill.; Frank L. Kiep will occupy the garage to be erected on the corner lot at Chicago and Jackson streets. The garage will be two stories, 129 by 138 feet.

St. Augustine, Ill.; Thomas Perry has drawn plans for a new garage and sales agency on the north side of the public square.

Sullivan, Ill.; Davis W. Shipman is erecting a new garage at Main and Jackson streets.

Goshen, Ind.; The George W. Mignery & Sons' horse stable, located on West Lincoln avenue, will be converted into an up-to-date garage.

Avoca, Ia.; Charles Schmidt is building a new garage.

Cedar, Ia.; Chester Davis is building a new garage and repair shop.

Ferguson, Ia.; Everett Ferguson is building a new garage, 24 by 40 feet.

Montieth, Ia; Redd & Masters will open a new fireproof garage, 40x60 feet, which is now being built.

Phillipsburg, Kan.; M. I. Goddard will erect a new garage, 52 by 150 feet.

Wichita, Kan.; Will G. Price will erect an $18,000 garage at Topeka and English streets. It will be two stories high, 50 by 140 feet.

Portland, Me.; Frederick W. Graham is building a garage on Clark street.

Boston, Mass.; J. W. Maguire, Pierce-Arrow dealer, has had plans drawn for a service station that will cost $100,000.

Springfield, Mass.; Louis Duquette will erect a new garage at 221 Worcester street.

Worcester, Mass.; B. L. Handleman is building a public garage.

Gaylord, Mich; Murray & Co. have contracted for a two-story garage, 45 by 90 feet.

Grand Rapids, Mich.; Ernest Vriesland and Harry A. Sherwood will operate garage at 1110 Ferrace avenue, S. E.

Hendricks, Minn.; H. J. Kurth & Son will erect a garage, 48 by 100 feet.

Minneapolis, Minn.; The Pure Oil Company will erect a garage at its filling station, 2858 Hennepin avenue.

Randalia, Ia.; Harvey Zbornick is fitting up a new garage.

Waseca, Minn; Arthur and Harry Castor will erect a garage on Third street, between Oak and Elm streets.

Independence, Mo.; The Paxton-Duke Motor Company is erecting a garage.

King City, Mo.; Beals Walton Auto Company will erect a two-story garage.

Deer Lodge, Mont.; Phil O'Neil is erecting a garage.

Lake Basin, Mont.; Arthur Marston will build a garage.

Livingston, Mont.; Charles Witt will conduct a garage.

Merchantville, N. J.; The Merchantville Auto Company is building a one-story garage adjoining the show room and is making other alterations.

Brooklyn, N. Y.; Louis Oxfeld & Sons, 361 Stone avenue, will erect a one-story garage at a cost of $30,000 on Prospect place.

New York, N. Y.; E. Higgins of 115th street and Amsterdam avenue, will erect a two-story, 42 by 100 foot garage, to cost $8000.

New York, N. Y.; James McLaughlin, 28 West 144th street, will erect a garage at a cost of $11,000.

Philadelphia, Penn.; The Philadelphia Storage Battery Company will erect a new building at the corner of C and Ontario streets at a cost of $40,000.

Philadelphia, Penn.; The Walnut Garage Company will erect a new garage at 65th street at a cost of $9000.

Ravinia, S. D.; Frank Blanha will build a two-story, hollow tile garage, 25 by 70 feet.

Amarillo, Tex.; Charles W. Ebel is constructing a modern and up-to-date brick storage garage. The building is located at Second and Fillmore streets and the name of the concern will be the Fillmore Street Storage Garage. Mr. Ebel will be manager.

Bloomer, Wis.; The Peil Garage is building an addition to its shop.

Lakemills, Wis.; Arthur Manske will build a $5000 garage at Wilton, Wis., having purchased the former Sorge building for $3000.

Oconomowoc, Wis.; Hugo Ernst will erect a new garage and repair shop. It will be 70 by 100 feet, two stories and basement, of brick and mill construction.

Platteville, Wis.; The Detroiter Garage has started work on its new garage on Main street. It will be 40 by 120 feet and two stories high.

Sextonville, Wis.; Floyd Ghastin will erect a new garage and repair shop.

Thorp, Wis.; The Thorp Automobile Company is building a new fireproof garage at a cost of $5000.

Alterations, Improvements and Additions.

Wilmington, Del.; George B. Booker is remodelling the large building on Fourth and Walnut streets into an up-to-date garage.

Atlanta, Ga.; The Willys-Overland Company has taken additional space in the building at 457 Peachtree street. The company also has quarters at Merritts avenue and Peachtree street.

Galesburg, Ill.; C. J. and F. L. Shaw have purchased the old Christian church, corner of West and Ferris streets, and have remodelled it into a garage and repair shop. An elevator has been installed to haul cars to the second floor, which will be utilized as a paint shop and storage department. A line of accessories will be carried.

Rock Island, Ill.; John Dee Automobile Sales Company has added a one-story brick addition, 40 by 65 feet, to the building, at 1612-1614 Third avenue. The improvements will cost about $5000.

Keota, Ia.; Overland Motor Inn is remodelling the garage by a new front.

Brockton, Mass.; W. H. Marble will erect an addition to garage at 69 Main street at a cost of $15,000.

Worcester, Mass.; C. E. Burnham and L. Warren Locke have enlarged the Palace Garage. The brick addition is 40 by 60 feet.

Alexandria, Minn.; C. W. Hurd is building an addition 20 by 60 feet.

Dawson, Minn.; F. L. Kaufman will make a 40-foot addition to the Red Trail Garage.

Carthage, Mo.; F. J. Clinkenheard has enlarged his garage.

Park River, N. D.; The Moore Auto Company is being remodelled. It is the Ford service station of the Moore Auto Company of Grand Forks, N. D.

Aberdeen, S. D.; Sandberg & Dinger are building an addition to their garage.

Merton, Wis.; J. Wesolowski is building an addition to his garage.

South Milwaukee, Wis.; Nirschl's Garage, Milwaukee avenue, is erecting a large addition to his garage.

Plans and Specifications.

Morrillton, Ark.; A. A. Lachowsky; one-story brick garage, 40x25.

New Britain, Conn.; City Service Station, corner Hartford avenue and Stanley street; two-story garage, 40x54; $4000.

New Haven, Conn.; J. E. McIntyre; one-story public garage, 150x50; $4500.

Washington, D. C.; George C. Altemus, 2920 14th street, N. W.; three-story public garage, 70x100.

Jacksonville, Fla.; Mitchell Estate, C. D. Rinehart; one-story garage, 90x70; $25,000.

Jacksonville, Fla.; E. H. Hill Realty Company; one-story garage, $25,000; lessee, Robert Holland.

Tampa, Fla.; Frank Buettz; two-story garage, 24x48; $4000.

Berwyn, Ill.; A. G. Burtar; one-story public garage, 45x125.

Chicago, Ill.; Milton H. Callner & Co., 123 W. Madison street; one-story garage, 50x119; $10,000.

Chicago, Ill.; Centaur Motor Company, A. M. Robins, president; B. R. Irving, secretary; 2246 South Michigan avenue; two-story auto service station, 100x180.

Chicago Heights, Ill.; O. W. Ritter, city clerk, City hall; one-story garage, 32x25; $2500.

Chicago, Ill.; Coey Automobile School, C. A. Coey, president; 2010 South Wabash avenue; one-story auto school building, 75x600.

Chicago Heights, Ill.; F. Darcher; one-story public garage, 34x42; $1200.

Chicago, Ill.; Thomas C. Denneby; one-story auto service station, 94x110; $20,000.

Chicago, Ill.; Robert M. Fair, 2222 Calumet avenue; two-story automobile sales room, 100x192 feet; $100,000.

Chicago, Ill.; A. and B. Hardware Company, 7128 South Chicago avenue; one-story private garage, 20x57; $4000.

Chicago, Ill.; M. Johnson, 7441 Burnham avenue; two-story garage, 24x30; $2000.

Chicago, Ill; Charles Vedra, 3743 W. 26th street; one-story public garage, 50x125; $10,000.

Chicago, Ill; William F. Pagels, 10 South La Salle street; one-story garage, 50x230.

Chicago, Ill.; R. H. Rasmusen, 2934 Armitage avenue; one-story garage, 22x30; $1500.

Chicago, Ill.; Harold White, 5314 University avenue; two-story garage, 20x24; $2500.

Canton, Ill.; J. Conklin; one-story public garage, 62x105; $10,000.

Champaign, Ill.; W. H. Holzer; two-story garage and sales room, 130x106; $22,000.

Danville, Ill.; A. G. Woodbury, 515 N. Vermillion street; one and two-story public garage, 66x156.

Harrisburg, Ill.; Charles A. Skagg; one-story garage, 50x60.

Jacksonville, Ill.; C. N. Priest, 1059 W. College avenue; one-story public garage, 80x155.

Joliet, Ill.; Kelp Brothers; one-story garage, 120x132; $10,000.

Joliet, Ill.; Joseph Straka, 646 Cass street; one-story garage, 18x37; $2000.

Marion, Ill.; O. S. Cole; one-story automobile sales room, 80x100.

Connersville, Ind; C. E. Calver; one-story private garage, 18x22.

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Indianapolis, Ind.; J. E. Sharpe, 408 Telephone building; one-story private garage, 24x28.

Kendallville, Ind.; Eugene Shanower; two-story public garage, 50x100; $10,000.

Buckeye, Ia.; R. C. Rodgers; one-story public garage, 50x116; $6000.

Dallas Centre, Ia.; Brenton Brothers; two-story public garage, 44x80; $12,000; lessee, Burkett Garage Company.

Sioux City, Ia.; Davidson Realty Company, Davidson building; two-story garage, automobile sales room and office, 100x150; $15,000.

Coffeyville, Kan.; George Pfister; one-story garage, 50x140; $5000.

Salina, Kan.; Eberhardt Brothers; two-story garage, 50x120; $15,000. Lessee, Ollinger Auto Company.

Louisville, Ky.; W. A. Thomas, 204 Guthrie street; two-story public garage; $30,000.

Louisville, Ky.; Thierman Realty Company, 219 W. Main street; one-story public garage; $15,000.

Louisville, Ky.; J. J. Gaffney; one-story fireproof garage; $20,000.

Newport, Ky.; Automobile Service Company; one-story public garage, 40x110; $35,000.

Portland, Me.; Miles B. Mourk Motor Car Company, 19 Forest avenue; two-story garage and sales room, 82x132.

Baltimore, Md.; J. E. Moxley, 1709 Edmondson avenue; three-story garage and show room, 30x200; $7500.

Baltimore, Md.; Mrs. Mary F. Jacobs, 11 Mt. Vernon street; one-story garage, 28x59; $5000.

Baltimore, Md; T. J. Ester, 86 Third street; two-story garage and machine shop; $5000.

Baltimore, Md.; Robert M. Stein, 408 N. Calvert street; three-story garage, 33x90; $20,000.

Baltimore, Md.; M. W. Crooks, 2608 Pennsylvania avenue; one-story garage, 200x195; $35,000.

Baltimore, Md.; W. A. Snyder; one-story garage, 45x100; $10,000.

Baltimore, Md; Charles H. Clemons, 930 Pennsylvania avenue; one-story garage, 36x97; $5000.

Boston, Mass.; Jane L. Webb, 10 Glen street; two-story garage, 100x138; $60,000.

Brockton, Mass.; A. Papazian, 25 Spring street; one-story public garage, 60x60; $5000.

Cambridge, Mass.; Robert Faucet & Son; one-story garage, 95x50; $15,000.

Dover, Mass.; Francis W. Sargent; one-story private garage, 78x26.

Montague, Mass.; Walter Cassidy; two-story public garage, 50x80.

Quincy, Mass.; N. DiPaulio; one-story garage, 52x80; $5000.

Randolph, Mass.; Cartwright & Hurley; one-story public garage, 60x40; $4000.

Springfield, Mass; Edward Radding, 575 Main street; one-story garage; $40,000.

Worcester, Mass.; B. L. Handleman, 26 Woodland street; two-story public garage, 56x260.

Worcester, Mass.; Louise Wyman; one-story private garage, 24x30.

Worcester, Mass; V. J. Eckberg Garage and Cab Company, 18 Wellington street; one-story public garage, 116x50.

Detroit, Mich.; J. W. Wilson, 70 Washington avenue; two-story garage and service station; 83x120.

Detroit, Mich.; United Fuel and Supply Company, Free Press building; one-story garage, 68x32.

Grand Rapids, Mich.; I. J. Quigley, 1122 Jefferson avenue; one-story garage, 20x22; $1450.

Grand Rapids, Mich.; Grand Rapids-Overland Auto Company, 49 La Grave avenue; three-story automobile storage building, including sales and repair departments; 120x200; $50,000.

Springfield, Mo.; George M. Jones Estate; one-story garage, 40x150; $12,000; lessee, Springfield-Overland Motor Company, 427 East Saint Louis street.

Albion, Neb.; Eacker Auto Company; two-story garage, 40x60; $5000.

Fremont, Neb.; John Monnich; two-story garage, 160x140; $16,000.

Lake Hopatcong, N. J.; George Gordon, one-story private garage, 75x50; $4000.

Newark, N. J.; William Yeskel, 470 Hunterdon street; two-story garage, 30x50; $5000.

Navesink Park, N. J.; Matthew J. Weiler, 9 Ward street, Newark, N. J.; one-story garage, 20x20.

Riverton, N. J.; Charles M. Biddle; one-story garage, 20x26.

Union Hill, N. J.; Henry Magg, 422 Lewis street; one-story public garage, 50x100; $15,000.

Albany, N. Y.; A. J. Cook; one-story public garage, 80x46; $20,000.

Albany, N. Y.; M. A. Shafer, 22 Colvin avenue; two-story public garage, 50x100; $25,000.

Brooklyn, N. Y.; Brooklyn Union Coal Company; one-story garage, 50x63; $8000.

Brooklyn, N. Y.; David P. Sammon, 345 Bush street; one-story public garage, 25x100; $9000.

Brooklyn, N. Y.; Max Rothchild, 1345 47th street; one-story garage, 12x20.

Brooklyn, N. Y.; Samuel Robin, 329 Lewis avenue; one-story garage, 20x60; $3000.

Brooklyn, N. Y.; Bahl-Abbott Construction Company; one-story garage, 100x135; $25,000.

Brooklyn, N. Y.; Thodle & Harvie, 306 Ninth street; 1½-story garage, 50x100; $30,000.

Brooklyn, N. Y.; John Van Raust, 309 Fifth avenue; one-story garage, 20x85; $3000.

Brooklyn, N. Y.; Perry Kent Company, 33 Pearl street; one-story garage, 25x60; $3000.

Brooklyn, N. Y; Economy Home Company, 1409 Avenue J; one-story garage, 28x53; $35,000.

Brooklyn, N. Y.; City and Suburban Homes Company, George W. R. Fallon, secretary, 624 Madison avenue; one-story garage, 204x108; $30,000.

Brooklyn, N. Y.; Herman H. Kellerman, 195 Woodbine street; one-story garage, 129x25; $4000.

Brooklyn, N. Y.; Rose L. Loeb, 668 Park place; one-story garage, 40x131; $16,000.

Brooklyn, N. Y.; Parcels Holding Company, 242 Broadway; two-story garage, 100x110; $7500.

Brooklyn, N. Y.; D. Laurecella, 213 Schenectady avenue; one-story garage, 40x20; $25,000.

Brooklyn, N. Y.; Flora J. Abraham, 405 Putnam avenue; one-story garage, 50x115; $10,000.

Buffalo, N. Y.; William H. Kennedy, 101 Windsor avenue; one-story garage, 19x23.

Buffalo, N. Y.; George L. Fischer, 416 Sycamore street; one-story garage, 22x20.

Long Island City, L. I., N. Y.; Frank J. Perrine, 306 Lockwood street; one-story garage, 75x200; $18,000.

Newton, L. I., N. Y.; New York and Queens Electric Light and Power Company, 444 Jackson avenue, Long Island City; two-story garage and ware house, 50x80; $30,000.

New York, N. Y.; Lippman Schumacher, 1128 First avenue; one-story garage, 71x131; $25,000.

New York, N. Y.; A. Wallace McCrea, 23 E. 15th street; six-story garage, 36x100; $60,000.

New York, N. Y.; Thomas F. McAvoy, 156th street and Harlem river; two-story garage, 75x100; $20,000.

New York, N. Y.; Henry D. Bahr, 285 East 137th street; one-story garage, 50x100; $12,000.

New York, N. Y.; Ensign Improvement Company, 391 East 49th street; Joseph A. Damsey, president; one-story garage, 113x110; $30,000.

New York, N. Y.; F. Sanford, 481 Park avenue; five-story garage, 50x100; $75 000.

New York, N. Y.; Diederich Wendelkin, 284 Southern building; one-story garage, 50x100; $7000.

New York, N. Y.; Morris Van Buren Realty Company, 1170 Broadway; one-story garage, 50x100; $8000.

New York, N. Y.; Robert Gordon Realty Company, 37th and East river; six-story garage, 30x201; $80,000.

New York, N. Y.; William C. Bergen, 1932 Arthur avenue; two-story garage, 46x120; $20,000.

New York, N. Y.; Robert J. Hahn and William Lang, 148 East 83rd street; five-story public garage, 50x100; $45.000.

New York, N. Y.; Thomas Giordane, 783 East 180th street; one-story garage, 150x70; $12,000.

Niagara Falls, N. Y.; Carbor-Undum Company; one-story garage, 150x20; $8000.

Rochester, N. Y.; Louis Gibland; one-story public garage, 116x63; $10,000.

Schenectady, N. Y.; A. A. Seeley, Jr. 614 Smith street; one-story garage, 50x90; $6000.

Syosset, L. I., N. Y.; Richardson Barott & Richardson, 31 State street, Boston, Mass.; one-story private garage, 38x26; $2500.

Syracuse, N. Y.; Florence B. Crouse, 400 Comstock avenue; one-story public garage, 36x27x20; $3000.

Charlotte, N. C.; Foreman-Howard Motor Company; two-story garage.

Wilmington, N. C.; Oscar Pearsall; one-story brick garage; $2500.

Cleveland, O.; C. C. Parsons & Co., 8006 Carnegie avenue; one-story garage and warehouse; $16,000.

Columbus, O.; E. J. Martin, 275 South Sixth street; one-story garage, 40x47; $3500.

Toledo, O.; Buick Company; one-story service station, 60x100; $18,000.

Tulsa, Okla.; Westerman Motor Car Company, Joseph E. Washington, vice president; one-story fireproof garage, 140x75; $17,000.

Bethlehem, Penn; Dr. H. T. Edwards, 314 W. Fourth street; one-story garage, 21x26; $2000.

Galeton, Penn; Sels & Curley; one-story public garage, 47x100.

Lancaster, Penn.; John Bair; two-story garage, 20x35; $3000.

Olyphant, Penn.; E. W. Roberts, manager, Roberts Lumber and Realty Company, Peckville, Penn.; two-story garage, 42x70; $10,000.

Philadelphia, Penn.; Edwin Kirk, 1911 Market street; one-story garage, 42x90.

Philadelphia, Penn.; M. Rosk, Jr., 832 E. Allegheny avenue; one-story garage, 55x177.

Philadelphia, Penn.; E. F. Kurtz, 43 N. Second street; 1½-story garage, 25x23; $2000.

West Pittston, Penn.; L. G. Hartman; two-story garage, 40x100.

Gaffney, S. C.; C. H. Robbins; two-story brick automobile building, 40x100; first floor and basement to be occupied by Gaffney Motor Company for garage and repair shop.

Memphis, Tenn.; W. I. Schulz; two-story public garage, 126x140; $30,000.

Memphis, Tenn; H. A. White Auto Company; automobile building at 1648 Union avenue; $5000.

Fredericksburg, Tex.; Joseph Brothers; one-story garage, 50x80; $5000.

Hereford, Tex; Tiefel Brothers; one-story garage, 50x140; $7400.

Waco, Tex.; E. W. Marshall; one-story automobile building, 55x75; $7.000. Lessee, Waco Mitchell Auto Company.

Brattleboro, Vt.; John B. Marley; two-story garage and sales room, 150x50; $15,000.

Suffolk, Va.; Elliott Motor Company; three-story automobile building, 50x100.

Wheeling, W. Va.; William Crusse; two-story garage and machine shop, 75x40; $10,000.

Evansville, Wis.; R. B. Townsend; one-story garage, 35x80; $5000.

Green Bay, Wis.; Hagemeister Realty Company; two-story auto distributing building; $50,000. Lessee, Overland-Green Bay Company, George W. Browne, 510 Broadway, Milwaukee, Wis.

Kaukauna, Wis.; Paul H. W. Pagel; one-story garage, 49x90; $5000.

Madison, Wis.; James Nevins; two-story garage and repair shop, 198x66.

Madison, Wis; Overland-Madison Company; four-story garage and storage station, 66x154.

CONTRACTS AWARDED.

Waterbury, Conn.; Valcourt & La Croix, 95 Bank street; two-story garage and service station, 100x193; for Waterbury-Overland Company.

Waterbury, Conn.; Chatfield & Chatfield, 94 Benedict street; two-story garage, 25x25; for Sanford Bull, 151 Hillside avenue; $4000.

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Waterbury, Conn.; Edwin H. Cowles, 427 Willow street; one-story garage, 36x100.

Waterbury, Conn.; Thomas J. Smith; one-story garage, 20x29; for C. P. Goss, Jr.

Washington, D. C.; A. L. Smith & Co., 1113 Woodward building; one-story garage at 1214-16 New Hampshire avenue, N. W.; for Christian Henrich; $20,000.

Bartow, Fla.; Bryan & Poteet, 11 Hardin building, Lakeland, Fla.; two-story garage, 100x55; fireproof roof, elevator, for T. E. Burdett.

Dayton, Fla.; Hawley & Hazens; one-story brick and concrete garage, 50x150; metal roof, for A. Mac F. Porter.

Chicago, Ill.; .Lubinski Construction Company, 138 N. La Salle street; one-story garage, 38x43; for S. Wrobel; $2000.

Chicago, Ill.; Consolidated Building Company; one-story public garage, 60x125; for A. C. Ackerman, 111 N. Washington street; $12,000.

Chicago, Ill.; Heidel & Beck, 6447 Morgan street; one-story public garage, 54x125; for H. A. Rasmussen, 6330 Emerald avenue.

Graettinger, Ia.; Julius A. Skow, Box 675; one-story public garage, 42x80; for J. Keil; $4000.

Hutchinson, Kan.; A. Bradbridge, 910 N. Main street; one-story garage, 50x165; $15,000.

Kansas City, Kan.; C. J. Burtner, 1063 Sanford street; one-story private garage, 16x14; for A. T. Welch, 1226 Rowland street; $300.

Mayfield, Ky.; Nall & Vaughn; brick garage, 40x150; concrete floor; electric lighting, concrete sidewalk; $5000.

Baltimore, Md.; Consolidated Engineering Company, 243 Calvert building; garage building at 12 and 14 Mt. Royal avenue; for Robert Stein. Lessee, United Auto Sales Company, William E. Straus, secretary and treasurer, 10 and 20 W. North avenue.

Boston, Mass.; Harry G. Trefry, 420 La Grange street; one-story private garage, 13x20; for Benjamin C. Lane, 19 Maxfield street, West Roxbury district.

Boston, Mass.; F. J. Van Etten, 53 Mapleton street; two-story public garage, 85x71; for Thomas Casey Company, 381 Market street; $20,000.

Boston, Mass.; E. S. Butterfield Company, 88 Broad street; three-story garage, 100x125; for Albert Gerger, Jr., 87 Milk street; $60,000.

Brookline, Mass.; William E. Kowatt; one-story private garage, 50x20; for Fred H. Searls, 16 State street; $4500.

Cambridge, Mass.; W. F. Condon, 219 Putnam street; one-story garage, 42x85; for Mary E. Sharky, 63 Fayette street; $3900.

Chelsea, Mass.; J. Roppoli, 78 Newburn avenue, Medford, Mass.; one-story garage, 50x50x15; for Louis C. Zoga, 706 Main street, Malden, Mass.; $4000.

Holyoke, Mass.; A. D. Durocher, 49 Cabot street; one-story garage, 50x47.

Lancaster, Mass.; William H. Illife, 55 Irving street, Watertown, Mass.; one-story garage, 61x24; for E. V. R. Thayer.

Lynn, Mass.; Guy Merrill, 7 Willow street; one-story public garage, 55x80, for Arthur Marsh, 249 Chestnut street; $5000.

Methuen, Mass.; Otto E. Steiner & Son, Lawrence, Mass.; one-story garage, 100x140; for Daniel C. Smith, 322 Bay State building, Lawrence, Mass.; $25,000.

North Adams, Mass.; John R. Button; one-story public garage, 33x40; for Berkshire Coal and Grain Company.

Springfield, Mass.; John L. Scott, 282 White street; one-story garage, 12x20; for Warren W. Crossman, 618 Summer avenue; $400.

Webster, Mass.; Richard J. Murphy; two-story garage, 108x75; $10,000.

West Newton, Mass; J. G. McLellan, 45 Bowker street, Brookline, Mass.; one-story garage, 46x25, for E. E. Blodgett, 174 Temple street; $5000.

Winchester, Mass.; F. C. Alexander, Old South building, Boston, Mass.; one-story public garage, 111x130; for Kelly & Hawes, 23 Railroad avenue.

Worcester, Mass.; Barnard Press, 18 Granite street; one-story public garage, 32x32; $8000.

Jackson, Miss.; W. J. McGee; one-story brick and frame garage, 50x140; specified roofing, concrete floor, for C. O. Wilkins; $5272.

Harrison, N. J.; W. H. and F. W. Cane, Woolworth building, New York; one-story garage, 30x100; for Crucible Steel Company of America.

Newark, N. J.; Metal Shelter Company, 17 Battery place; two garages, 14x48 and 18x90; for Greenstone Realty Company, 222 Washington street; $5000.

Newark, N. J.; Mathias Hiltgen, 77 19th avenue; one-story public garage, for Alexander Brunner, 441 South 11th street; $6000.

Orange, N. J.; James A. Anderson, 30 N. Centre street; one-story garage, 42x41, for Henry M. Keasby, 283 Berkeley avenue; $3000.

Summit, N. J.; William Fleming; one-story garage, 36x68; for Enterprise Steam Laundry Company; $3000.

Brooklyn, N. Y.; William Flanagan, 118 East 28th street; two-story garage, 80x99, for Diuguid Brothers, 784 Prospect place.

Brooklyn, N. Y.; Fraser & Bereau, 749 Macon street; two-story garage, 67x99; for C. Chapel, 418 Willoughby avenue; $10,000.

Brooklyn, N. Y.; Walter Ryan, 918 Bedford avenue; one-story garage, 33x100, for James McDonald, corner Bedford and Myrtle avenues; $15,000.

New York, N. Y.; Pasquale Santine, 609 Jackson avenue; six-story garage, 49x100; $50,000.

New York, N. Y.; Champlin Construction Company, 103 Park avenue; three-story garage, 231x100, for Hudson Motor Car Company, Inc.; C. H. S. Houpt, 1842 Broadway; $100,000.

New York, N. Y.; Robertson & Gammie, 390 Wadsworth avenue; one-story garage, 116x204; $15,000.

New York, N. Y.; George Hoffman, 1071 Washington avenue; four and five-story automobile storage and warehouse, 71x135, and wing, 21x58, for Metropolitan Roofing Metals Company, 203 East 135th street; $60,000.

New York, N. Y.; Richard Carvel, 605 W. 137th street; two-story auto service station and storage building, 50x100; $28,000.

Rochester, N. Y.; Erion-Gilbert Construction Company; two-story garage, show room and storage station, 55x200, for John Erion, 346 East avenue. Lessee, Mandery Motor Car Company.

Rochester, N. Y.; W. A. Naramore, 110 Westminster road; two-story garage, 100x116; $20,000. Lessee, E. J. Ellis & Co.

Saranac Lake, N. Y.; J. J. O'Connell; two-story garage, 40x60; $7500.

Schenectady, N. Y.; Cook & Ripley, 46 Linden street; one-story garage, 24x65, for J. Grangele; $3500.

Syracuse, N. Y.; Genesee Motor Car Company, 430 S. Warren street; one and two-story garage and show room, 52x240.

Syracuse, N. Y.; James Howell, 151 Frank street; one-story service station, 60x140; for Syracuse Motor Car Company, David Grady, president, 235 W. Genesee street.

Laurinburg, N. C.; W. D. Tucker; one-story brick garage, 50x90, for D. C. Odom.

Raleigh, N. C.; Ford Sales Company; W. S. Murcheson, local manager; two-story garage, 210x70.

Toledo, O.; Gettins & Kopike, 6 Messenger building; one-story garage, 96x100, for Meyer Auto Repair Company, 23rd and Madison street; $8000.

Toledo, O.; G. Bender, 2402 Walnut street; one-story garage, 38x90, for William Gasser, Fremont, O.; $3000.

Enid, Okla; Weller & Reardon; automobile building for Arenz Brothers; $5000. Lessee, Carriage and Automobile Company.

Ambridge, Penn.; Pittsburg Engineering and Construction Company, Vandergrift building, Pittsburg, Penn.; one-story commercial garage, 45x100, for Lincoln Auto Repair Company; $10,000.

Norristown, Penn.; F. R. Heavenor; 1½-story garage, 46x28; for T. B. Wildinan, 811 Main street; $5000.

Philadelphia, Penn.; Joseph Roberts; one-story garage, 17x23.6, at 101 W. Pollard street; for Church of the Immaculate Conception; $1100.

Philadelphia, Penn.; Rush Brothers; one-story brick garage, 17x30; at southwest corner Foulkrod and Duffield streets, for William Stewart; $1100.

Philadelphia, Penn.; G. R. Lenbert; two-story brick garage, 50x100; north side of Hamilton street, west of 38th street; $4000.

Philadelphia, Penn.; Frank L. Wints; one-story brick garage, 51x89.11; west side Redfield street, south of Lansdowne avenue, for Elizabeth Bins; $5500.

Philadelphia, Penn.; Albert Siever, 2728 Kirkbride street; one-story garage, 40x32, for William P. Pfitenmaier, 2638 Bunkins street.

Philadelphia, Penn.; J. D. Fisher; one-story brick garage, 52x200; west side of 62nd street, south of Cedar avenue, for F. Fling; $7500.

Philadelphia, Penn.; A. Harkins; one-story brick garage, 17x18; east side of 65th street, south of Woodland avenue; $500.

Philadelphia, Penn.; Lewis Deitrich; five garages, each 9x19, at 5914 Torresdale avenue, for J. Philip Keck; $1000.

Philadelphia, Penn.; W. H. Taylor; one-story brick garage, 16x30, at southwest corner 25th and Callowhill streets, for Baltimore & Ohio Railroad Company; $800.

Philadelphia, Penn.; B. H. McLaughlin; one-story stone garage, 20x24; north side Haines street, east of Chew street, for W. C. Kunber; $1200.

Philadelphia, Penn.; B. L. Carroll; four brick garages, 12x17 each; east side of Graham street, north of Vine; $1000.

Philadelphia, Penn.; James M. Holm; one-story brick garage, 16x96, at 202-204 South 59th street, for L. H. Leedom; $2875.

Philadelphia, Penn.; D. Gold; one-story brick garage, rear 2824-26 Dauphin street; for O. G. Nelson; $1500.

Philadelphia, Penn.; W. Clark; one-story garage, rear 1707-09-11 North 12th street; $10,000.

Philadelphia, Penn.; Hogg Construction Company; one-story brick garage at 1214-16 North Darien street, for Swift & Co.; $2500.

Philadelphia, Penn.; Charles Colgan; one-story brick garage, 29x217, at southwest corner 36th street and Grays Ferry road, for Barrett Manufacturing Company; $9900.

Philadelphia, Penn.; Samuel R. Edge; two one-story brick garages, on east side of 54th street, south of Woodland avenue, for W. Grant; $2500.

Philadelphia, Penn.; P. J. Gallagher; two-story brick garage, 25x70, at 3314 Fairmount avenue; $1500.

Philadelphia, Penn.; M. C. Rhettenbock; one-story garage, 21.6x18, at 360 Church lane, for J. C. Peters; $600.

Philadelphia, Penn.; J. E. Mattis & Son; one-story brick garage, 11x20, east side of Horrocks street, north of Foulkrod, for Michael Christ; $650.

Philadelphia, Penn; Alan G. Smith; one-story brick garage, 28x47, at 2035 North 63rd street; $2500.

Philadelphia, Penn.; C. C. Pace; two-story hollow tile garage, 27.6x22, at 2048 Upland way, for Dr. McQuillan; $2100.

Philadelphia, Penn.; Robert Christy; one-story brick garage, 50x66, at 208 East Mt. Airy avenue, for H. F. Walters; $1200.

Philadelphia, Penn.; Alvin E. Kehl; one-story brick garage, 16x16, southwest corner 60th and Irving street, for W. S. Moulder; $500.

Philadelphia, Penn.; Robert Killough; three one-story stone garages, each 12x17, south side Arbutus avenue, east of Wayne avenue; $1350.

Philadelphia, Penn.; J. F. Holland; one-story brick garage, 70x100, southwest corner 62nd and Locust streets.

Philadelphia, Penn.; Charles J. W. Platt; one-story brick garage, 17.8x22.2, rear 3410 Baring street, for Robert Bringhurst; $1200.

Philadelphia, Penn; F. G. Hering; one-story brick garage, 45x122, rear of 451 Queen street; $4000.

Philadelphia, Penn.; E. D. Smith; one-story brick garage, 40x105, southeast corner Edgemont and Elkhart streets; $3500.

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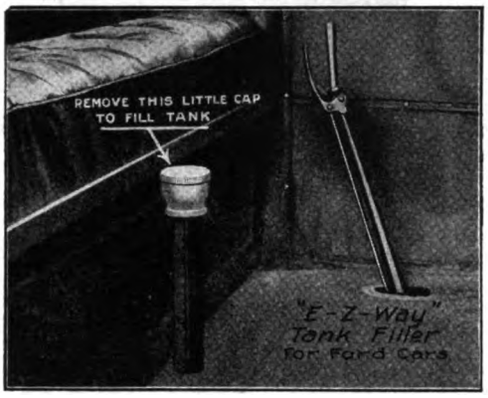
Accessories and Equipment

UNIVERSAL TANK FILLER.

The Universal tank filler is a combined filler spout and gasoline gauge and enables the owner of a Ford car to fill his fuel tank without getting out of the driver's seat. Our illustration shows the spout and gauge installed in the front compartment, close by the seat and entirely out of the way. The device is made of steel and aluminum and is guaranteed to last as long as the car. It is easily installed by any owner or garage man and complete instructions for the work are sent with each filler. It is not necessary to cut or drill a hole in the gas tank.

Manufactured by the Go Motor Speeder Company, Three Rivers, Mich. Price, filler only, $3.75; filler and gauge combined, $5.



Universal Tank Filler.

GARLAND EXHAUST VENTILATOR.

The Garland exhaust ventilator is installed on the hood of the car directly over the point where the greatest volume of superheated air from the motor gathers to allow it to escape. The heat automatically escapes as fast as it is generated, the ventilator being capable of exhausting more than 25,000 cubic feet per hour with the car travelling at ordinary speed. The device operates even when the car is still, and may be regulated or entirely put out of action by means of a shutter control. It does not interfere with either the raising or lowering of the hood, and is storm proof. The operating principle is that air enters through the forward aperture, passing out through the lower vents and suctioning the heat from the motor with it. More than a thousand of these ventilators are now in service. The device is easily and quickly installed.

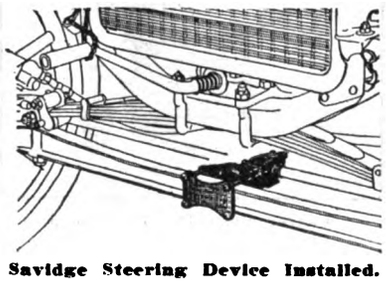
Marketed by the Ross-Wortham Company, McCormick building, Chicago. Write for details and price.

Garland Exhaust Ventilator.

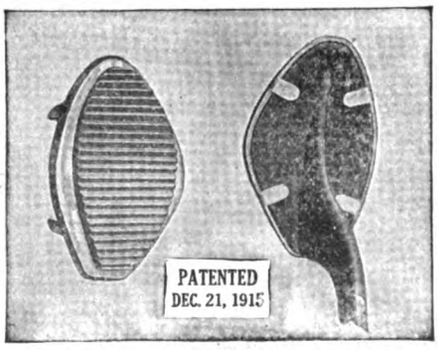
PERFECTION PEDAL PADS.

Perfection pedal pads are molded from high grade, solid, pliable rubber, set in a cold rolled steel frame, which is attached to the pedal by metal prongs. The upper surface of the pad has deep, corrugated ribs, insuring a firm suction grip for the foot. The frame is nickel finished and is attached without the necessity of drilling holes in pedal or using bolts. A type for every make of car—when ordering give year, make and model of car.

Manufactured by the Auto Pedal Pad Company, 794 Seventh avenue, New York City. Prices supplied upon application.



Savidge Steering Device Installed.



Perfection Pedal Pads.

SAVIDGE STEERING DEVICE.

The Savidge steering device for Ford cars has been improved in its new form. The interior mechanism, which formerly was exposed to weather conditions, has been enclosed and the device now operates in an oil bath, thus reducing the possibility of wear. The purpose of the device is to keep the front wheels in a straight ahead direction, when not turned otherwise by the driver of the car. The maker claims that it prevents the wheels from wobbling, acts as a shock absorber on the steering column, makes steering easier, prevents the car from buckling under and provides positive control at all times.

Manufactured by the Savidge Company, Indianapolis, Ind. Price, $4.90.

OPCO CARBON REMOVER.

Opco carbon remover is an oil mixture for cleaning every kind of a gas engine cylinder of carbon encrustations. The maker asserts it is absolutely harmless to everything except carbon, which it destroys. It is inserted through a priming cup, spark plug taps or intake manifold. In ordinary cases about four ounces is sufficient for each cylinder, it being injected while the motor is warm. After setting for about five minutes the softened carbon will be ejected through the exhaust when the motor is again started. In extreme cases a little more of the mixture is required. The carbon remover is guaranteed.

Manufactured by the American Oil Products Company, 1426 Seneca street, Buffalo, N. Y. Price $1 per quart can.

AUTO-BODY TONIC.

Even a new car will lose its gloss after a month or two in service if some means is not taken to preserve the finish. For this purpose the Americus auto-body tonic can be used with surprising results. It is a nourisher for varnishes, preserving and toning the finish. The application of the tonic is said to restore the color and lustre to bodies, fenders, leathers and metals, and affording new life to them, the equal to that of a new coat of paint. It is a liquid preparation, easy to apply, weather proof and dust proof.

Manufactured by the Americus Products Manufacturing Company, Detroit, Mich. List price, $1 per quart can.

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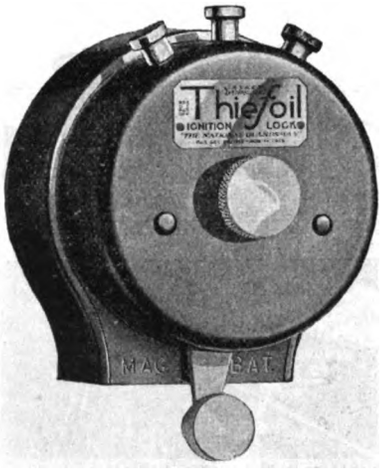
THIEFOIL LOCK FOR FORDS.

The Thiefoil ignition lock for Ford cars is a new type of permutation lock, so constructed as to be easily attached to the face of the standard Ford switch without making any change in the wiring arrangements or requiring the use of any special tools. Primarily this is a combination lock without keys or dials. The ease with which it may be operated when the combination is known makes it particularly adaptable for application to automobile ignition switches. Projecting from the top of the lock are three buttons, each of which must be pressed a certain number of times to operate the lock. Locking the switch is accomplished by simply pressing one of the buttons, which upsets the combination, when the whole operation must be gone through before the switch lever can be moved. There are more than a thousand possible combinations which may be arranged. The construction is such that it is readily removable when unlocked. The user can make up any desired combination within range of the lock by setting the indicators on reverse side of it. The fact that there are no figures to watch or dials to set makes it an easy matter to operate it in the dark or with gloves on. Furnished in black with nickel trimmed buttons.

Made by Caskey-Durpee Manufacturing Company, Marietta, O. Retail price, $3.50 each.

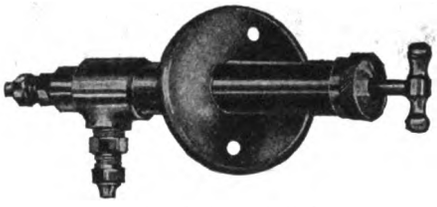


Thiefoil Lock for Fords.

DASH BOARD PRIMER.

The Ideal auto dash board primer, model E, is designed to overcome the ordinary difficulty of starting a motor in cold weather. It is attached to the feed line and has positive feed, delivering just the proper amount of fuel to the manifold when required. The stem of the device is threaded and when not being used it can be made to close the check valve to prevent leakage by turning the handle a few times. Furnished complete with tubing and connections ready to install.

Marketed by the Ideal Brass Works, 10th and Canal streets, Indianapolis, Ind. List price, nickel plated, $3.

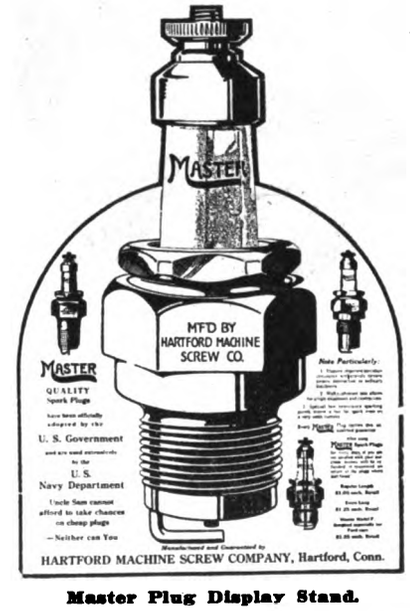


Ideal Dash Board Primer.

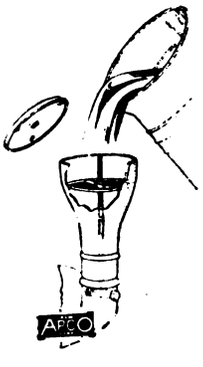
APCO BREATHER.

A new Apco breather pipe for Ford cars is now being manufactured. This device not only simplifies the renewal of oil supply, but eliminates the disagreeable spraying of oil over the engine and inside of the hood. It is provided with a fine screen to strain the oil and prevent the entrance of foreign matter into the reservoir. A feature of this new accessory is a hook which fastens around the timer bolt. This hook, being integral with the breather, holds it firmly in place and makes the removal of the cover an easy matter. The Apco breather is nicely finished and should prove a valuable feature.

Manufactured by The Auto Parts Company, Providence, R. I. Price, 50 cents each.



Master Plug Display Stand.



Apco Breather Pipe for Ford Cars.

SPARK PLUG DISPLAY STAND.

The Hartford Machine Screw Company of Hartford, Conn., is offering to dealers handling their Master spark plugs the very attractive display stand shown. Particularly noticeable is the mammoth plug, which can be seen for a long distance. The stand is 20 inches high and in three colors, with a brilliant red background and the plugs in silver and blue. This stand should make an attractive piece of advertising matter for any dealer and is most certain to attract the attention of a prospective purchaser of spark plugs when he enters the store.

Distributed by the Hartford Machine Screw Company, Hartford, Conn.

THE LECTROFLATER.

Lectroflater is the trade name given to an ingenious combination of a universal electric motor that will run on either alternating or direct current, a high pressure air compressor, gear box and condensing chamber so arranged that all elements are enclosed in a single housing and automatically cooled by a patented system which requires no liquid.

All bearings, gears and pistons are automatically lubricated from a central source by a capillary system. There is no liquid lubricant or oil level to maintain and consequently there can be no flooding or can oil vapor reach the tires.

The instrument is equipped with a long electric cord, high pressure gauge, hose and quick acting coupling. Connection can be made to any lamp socket.

These machines are made in two sizes. The No. 1 size is particularly suited to private garages, while the No. 2 size, which has two and one-half times the capacity of No. 1, is intended for public garages, tire sales rooms and like places where there are heavy demands for air. This model is also furnished mounted on a light seamless steel tubular carriage, having large diameter wheels and a tool tray. Either size can be furnished for mounting permanently on the wall.

Manufactured by the Black & Decker Manufacturing Company, Baltimore, Md. The No. 1 size, $45; No. 2, $65, or when fitted with carriage, $80.

The Lectroflater.

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ELECTRIC GLUE POT.

Glue, to be effective, should be applied hot. In a shop where there are dangerous fumes and often raw gas, oil and grease around it is not good policy to have an open flame about. A glue pot which can be used where these conditions do exist is the Mabey electric glue pot. As there is no flame, soot or smoke, nor intense heat, all danger of fire is eliminated. It consists of a heat retaining jacket made of heavy ingot iron, containing the electric heating unit. Into this jacket is set a substantial copper glue cup. The even distribution of heat which radiates in all directions gives the same efficiency as water. The consumption of electricity is kept down to a minimum because the insulation prevents loss of radiation and waste of current. The outfit is simple, durable, economical and efficient. Usually equipped with six-foot cord and plug and arranged for 110 volts.

Mabey Electric Glue Pot.

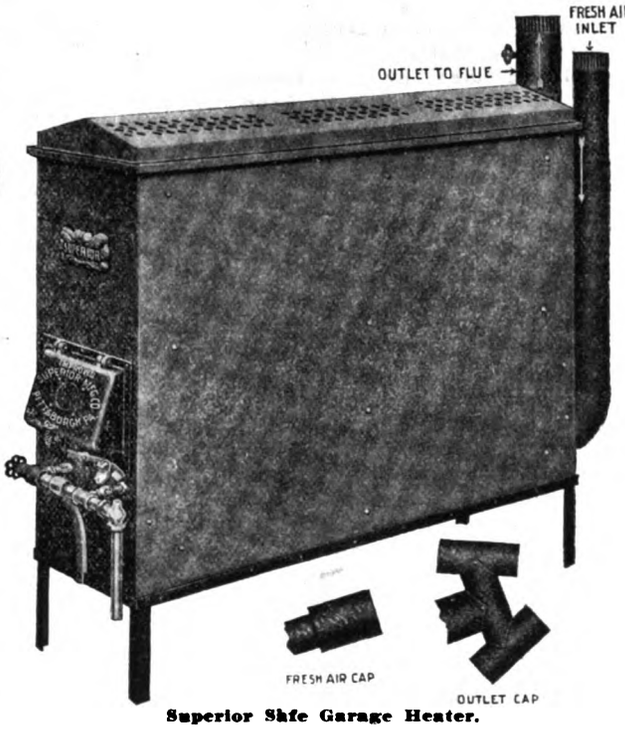
Boyce Moto-Meter.

Distributed by Mabey's Electric and Manufacturing Company, Indianapolis, Ind. Prices, one quart, $9.50; two quarts, $11; three quarts, $12.75; four quarts, $15.75.

GARAGE HEATER.

The Superior Safe Garage Heater is an efficient air tight furnace, consisting of a combustion chamber and tubular radiator, which are secured inside a heavy galvanized casing lined with thick asbestos board. The combustion chamber contains a single piece cast iron drilled burner, a basket of patent English fuel and a small pilot light. Perfect combustion takes place inside the chamber and every unit of heat is liberated ere the products escape through the exhaust pipe. All the air consumed by the heater enters through an intake pipe placed at a safe place outside the building, so that no fumes or gases can enter, thus insuring safety. The heater is provided with an automatic self-locking, gas proof door, which need be opened but once during the cold season to light the pilot, as this uses so little gas to keep itself going that it is usually left burning all the time. An adjustable spud is attached to the valve and this regulates the flame and gas pressure at all times, so that there is no danger of overheating when left to burn all night. In the centre of the door is a small, circular window, made of mica and protected by a safety gauze wire, which enables you to see the condition of the fire inside at any time. It is constructed so that it will not mar or blister the finish of any car, no matter how near it may be. While furnished to set upon legs, the heater may be bolted to the wall if desired. This outfit can be equipped with water heater at small additional cost.

Made by the Superior Manufacturing Company, N. S., Pittsburg, Penn. Prices



Superior Safe Garage Heater.

for heater for garage up to 3000 cubic feet, $15; up to 5000 cubic feet, $25.

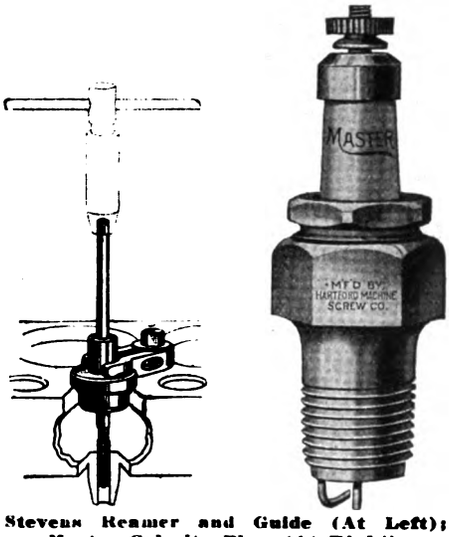
BOYCE MOTO-METERS.

Engineers of the Willys-Overland factory have made the Boyce Moto-Meter regular equipment on all 1917 Willys-Knight cars. At their suggestion the manufacturers of this instrument have designed for and are now ready to offer to Overland owners this instrument, which differs from others of the same make only in the design of the stem. Attachment has been arranged so that anyone can fit it to his car by simply enlarging the hole in the radiator cap.

Made by the Moto-Meter Company, Inc., Long Island City, N. Y. Prices upon application.

CALORITE IN MASTER PLUGS.

In the August issue it was erroneously stated in the description of Master Calorite spark plugs that a porcelain insulator was used. The fact that the makers have abandoned the use of porcelain is one of the claims put forth for the superiority of this make of plug, Calorite, a new insulating material being substituted because of its greater resistance to heat and cold conditions. Before adopting the material the makers subjected it to the most severe tests, one of these being to heat a Master Calorite plug to a white heat and then plunging it into cold running water. The plug did not show the slightest indication of a crack; an ordinary porcelain plug broke before reaching a white heat and before it was put into water. Another test consisted of trying out Calorite as an insulating material, and it was found to withstand a 10 per cent. higher voltage than the finest porcelain obtainable. The makers of Master Calorite plugs are this year featuring the model F, a new model designed especially for Ford and Reo cars. It is of unusual length, putting the spark way down into the explosion chamber. In addition to this model there is



Stevens Reamer and Guide (At Left); Master Calorite Plug (At Right).

the regular length Master Calorite. All Master plugs are leak and soot proof and of superior quality.

Manufactured by the Hartford Machine Screw Company, Hartford, Conn. List prices, regular length plug, $1; extra length and Ford model, $1.25.

STEVENS REAMER AND GUIDE.

The Stevens valve reamer and guide for oversize valves on Ford cars bolts to the cylinder head, centering the reamer in the valve guide to insure an accurate job. The reamer is 1/64 inch oversize and is accurately ground to size. The reamer guide is furnished with a clamp and bolt for securing to the cylinder head, and the oversize valve heads are electrically welded to stem, 1/64 inch oversize.

Marketed by Stevens & Co., 375 Broadway, New York, N. Y. Price of valve stem reamer, $1.50; reamer guide, without reamer, $1.50; oversize valves, 20 cents each.

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Brunswick Skid-Not Tire.

BRUNSWICK SKID-NOT TIRE.

The Brunswick skid-not tire, which will be placed on the market Oct. 1, 1916, is of the wrapped tread, single cure type, the tread being mortised. The middle of the tread, where is the greatest wear, will be smooth and contain the most of the tread stock. The depressions on the side have sharp, biting angles, for the purpose of preventing side slipping without resorting to suction and without loss of traction. The Brunswick tires will be made both in skid-not and plain tread for clincher quick detachable and straight side rims and will carry a 5000-mile guarantee. Distribution will be through the maker's branches to dealers direct.

Manufactured by the Brunswick-Balke-Collender Company, 623 South Wabash avenue, Chicago. List price, 34x4 Skid-Not, $22.40.

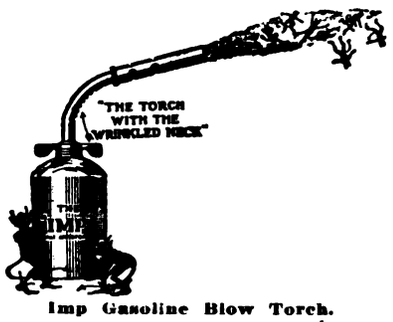
IMP GASOLINE BLOW TORCH.

The Imp gasoline blow torch, though small will do as much work as a larger one, and it will heat anything or solder anything any other torch will. It is for hand or bench work, has no pump or valve, is entirely automatic and burns two hours on one filling. It will produce a perfect Bunsen flame of more than 2000 degrees Fahrenheit, is perfectly safe in use and cannot get out of order. Its corrugated neck increases the heating surface and creates a greater pressure than could otherwise be obtained. The torch is all brass, nickel plated.

Marketed by the Carleton Company, 170 Summer street, Boston, Mass. Price, $1.50.

BAR CIRCLE TIRE.

The Bar Circle tire, a new Pennsylvania Rubber Company product, is designed for the popular trade. This new casing is of distinctive tread design. The tread is made of tough black rubber of high quality. The name is derived from a combination of heavy bars and circles.



Imp Gasoline Blow Torch.

Positive Split Rim Remover.

Each casing sold is accompanied by a 3500-mile guarantee.

Manufactured by the Pennsylvania Rubber Company, Jeannette, Penn. Prices and dealer proposition, including exclusive territorial arrangements, quoted upon request.

POSITIVE SPLIT RIM REMOVER.

The Positive split rim remover not only unlocks, contracts and removes split rims, but will also expand and relock them in position. It can be used on any make of split rim and can be adjusted to fit any size. It has arms that fasten to the rim at different points, one of which operates to "break" the rim lock, while the other arms contract the rim. The device is worked by a lever handle. The tool weighs but three pounds and is easily carried in the car.

Manufactured by the Midland Supply Company, Davenport, Iowa. List price, $2 and guaranteed under money back if not satisfied agreement.

PULL-U-OUT.

Pull-U-Out is a new mechanical device that has a dead weight lifting capacity of 3680 pounds and a hauling force that will move more than 100,000 pounds on wheels. With it one person, unaided, can pull a big automobile out of a ditch or hub-deep mud, or right the car if overturned. It consists of a substantial winding drum, a lever ratchet crank, a steel cable, a pulley, two seven-foot chains and three 13-inch stakes, and it can be utilized to pull horizontally or lift a load of one ton with every 30 pounds of pressure applied to the crank of the winding drum.

Fan-Fire Plug.

Marketed by the Pull-U-Out Sales Company, 2018 Market street, St. Louis.

FAN-FIRE SPARK PLUG.

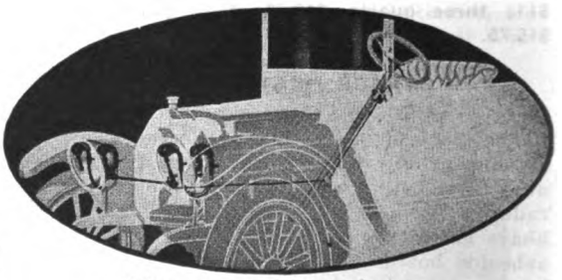
A spark plug that gives off a flaming circle of sparks has been introduced under the name of the Fan-Fire, a name that is taken from the fact that it has a small nickel steel fan mounted loosely on a centre rod and rotating at a high rate of speed, throwing off hot sparks from each fan blade. The fan is actuated by explosions within combustion chamber and is claimed by its makers, as well as users, to deliver perfect ignition, thus increasing the power of the engine. Another advantage claimed is that because the fan is always rotating during operation of the motor it tends to keep itself clean by throwing off all carbon and oil deposits that would ordinarily accumulate on the metal and porcelain parts. The plug is fully guaranteed and strongly built of extra heavy porcelain and its bushings are air tight.

Manufactured by the Fan-Fire Spark Plug Company, Yonkers, N. Y. Price, $1.

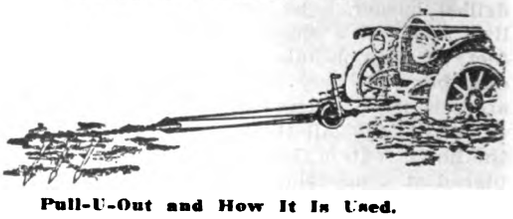
DEFLEX.

The Deflex is an adjustable headlight deflector, consisting of a pair of hinged lamp brackets, automatically operated by powerful, enclosed springs. From a lamp bracket a cable runs under the hood and up the steering column. Gentle pressure applied to a small lever at the end of the cable, instantly deflects the headlights, concentrating the full force of the light on the road just in front of the car. By touching a button the lights instantly spring back to their horizontal position. The device can be easily adjusted to any standard two post lamps already on the car and it is adapted to either a left or right hand drive.

Manufactured by the Universal Auto Parts Company, 1251 Michigan ave, Chicago, Ill. List price, complete, $7.50.



Deflex in Position on Car.



Pull-U-Out and How It Is Used.

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Today 1916

Yesterday 1899

An Illustrated Story of Remarkable Progress

Yesterday In 1899 the factory of the Fisk Rubber Company consisted of a single building, three stories high, on a plot 100x50. There was an ell 50x75, making a total floor space of 18,750 square feet.

Today To keep pace with the constantly increasing demand for Fisk Tires, factory after factory was added. Today the Fisk plant is comprised of "29 acres of floor space, devoted solely to the manufacture of pneumatic tires", and more than 125 Direct Service Branches in the principal cities throughout the United States. In this group of buildings is one of the largest structures in the world used for manufacturing purposes. It is of five stories and basement, each floor containing 65,124 square feet or a total floor area in this building alone of 390,744 square feet.

One small room, tucked away in a corner of the original factory, served as the office headquarters, back in '99. Today the administration building of the company is of seven stories and is devoted exclusively to the offices for the various departments, the dining rooms, rest rooms, emergency hospital, and so on.

The steady and remarkable growth of the Fisk plant is one of the most fascinating romances of modern business. From the modest beginning in 1899 to the monster plant of today is a long step. Yet it is only a natural consequence—and a fitting monument to an honest manufacturing idea. From the very beginning there has been only one policy—to give the buyer of a Fisk Tire his full money's worth. That that policy has been a success is evidenced by the growth of the plant and the ever increasing demand for Fisk Tires.

THE FISK RUBBER COMPANY
of N. Y.

Chicopee Falls **Massachusetts**

FISK TIRES

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1,200,000 CARS PRODUCED IN 1916.

Despite Enormous Output Makers Are Figuring On Increased Production for Next Year.

The estimated production of automobiles by the American manufacturers for the 1916 automobile season, which closed Aug. 1, was 1,200,000 cars. This output compares with slightly over 700,000 in 1915 and about 570,000 in the 1914 season. Despite this enormous production the manufacturers are planning on a further large increase for the ensuing season, which will be even greater than that shown by the 1916 production over the previous season. There appears to have been no let up in the demand for automobiles and with the market rapidly absorbing the output the makers seem secure in their stand for greater production.

The Ford Motor Company, which turned out 523,920 cars up to Aug. 1, plans on between 800,000 and 1,000,000 Fords for the present season, while the Buick company plans a production of 122,000 cars as compared with 80,000, the number turned out during the season just closed. The Buick production this year made up the bulk of the output of the General Motors Company, which manufactured a total of 132,000 cars and which this year will turn out close to 200,000 cars.

The Maxwell company, which manufactured 60,498 cars in the year ending July 31, 1916, plans a production of 120,000 cars for 1917, while the Saxon company is planning an output of 45,000 cars against an actual production of 25,399 in the 1916 season. The Chevrolet company is also in the race for production, planning on 150,000 cars as compared with 96,000, the number estimated to be made during the year closing in December.

The scheduled outputs of other manufacturers for 1917, all of which show liberal increases, are as follows: Hudson, 35,000; Packard, 15,000; Haynes, 11,000; Regal, 6200; Stearns, 5000; National, 4800; Stutz, 4000; Marmon, 4000; Simplex, 1500.

The following table gives the output of a representative list of automobile manufacturers for their respective fiscal years with comparisons:

	Fiscal Period	1916	1915
Ford	July	523,920	308,213
Willys-Overland	Dec.	200,000	95,000
General Motors	July	132,000	76,000
Chevrolet	Dec.	96,000	20,000
Studebaker	Dec.	75,000	46,845
Dodge	July	60,390	*17,948
Maxwell	July	60,366	32,281
Saxon	June	25,399	12,000
Paige-Detroit	July	17,000	7,749
Hupp	Dec.	16,000	11,000
Chandler	Dec.	15,000	8,000
Mitchell	July	15,000	6,186
Packard	July	12,750	4,908
Grant	July	10,000	4,189
White	Dec.	8,100	....
Haynes	July	6,700	3,780
Regal	July	5,500	3,897
Stearns	July	3,000	1,000
National	July	2,502	753
Stutz	July	2,000	1,079
Locomobile	July	1,747	1,436
Simplex	July	225	156

*Six months.

AUTO FASHION SHOW.

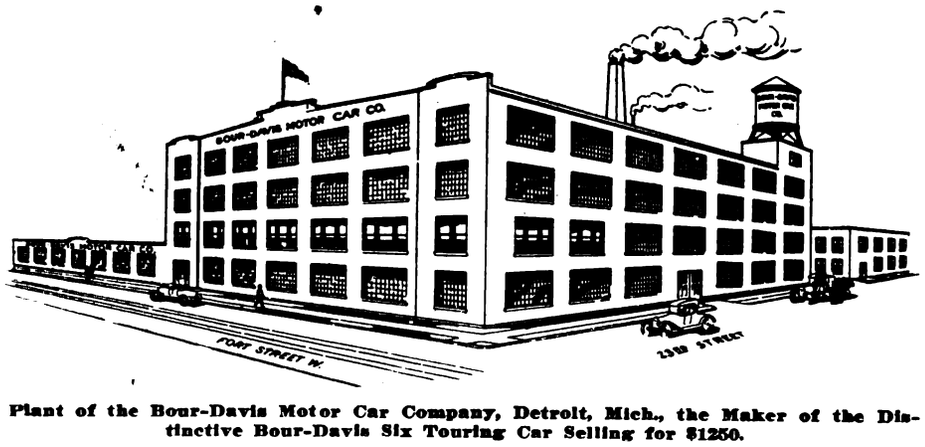
Maxwelton park, St. Louis, will be the scene of a unique pageant on the first Friday in October, when St. Louis society matrons will display themselves in the latest fashions during a parade of elaborate and highly decorated automobiles. Most of the cars used will be of the latest 1917 types with finely finished bodies and trimmings.

TECHNICAL SCHOOL OPENS.

The classes in automobile drafting and construction of the Technical School for Automobile Draftsmen and Mechanics at 20 West 44th street, New York City, opened for the season on Oct. 2. Applicants for admission must be employed in the manufacture of pleasure or business automobiles, must be 16 years of age or more and be able to speak, read and write English and to write a fairly good business letter.

The day classes are for students who wish to devote their entire time to studying, while the evening classes are of only two hours duration. Instruction in both classes is free.

A correspondence course is also conducted by the school for which a moderate charge is made.



Plant of the Bour-Davis Motor Car Company, Detroit, Mich., the Maker of the Distinctive Bour-Davis Six Touring Car Selling for $1250.

FAW'S SEARCHLIGHT MIRROR.

One of the most recent and practical developments in the field of automobile searchlights is the detachably mounted mirror for the Culver Stearns Giant searchlight designed by J. H. Faw of J. H. Faw, Inc., 41 Warren street, New York City. This mirror can be placed at any angle on the back of the Giant light and thus serve a twofold purpose. It is readily removable for repairs and eliminates the necessity of sending the whole lamp back to the factory in case of breakage, which allows the lamp to be used until the repairs are completed.

This is the first time a mirror has been detachably mounted on a spot light and marks considerable progress in this line. The mirror attachment makes for flexibility of usage and is a great improvement over the types in which the mirror is so fixed that it is practically impossible to use the lamp from either side or change the mirror to a desired position, since it is built permanently into the lamp shell.

Faw's Searchlight Mirror Attached to Culver-Stearns Giant Searchlight.

With the new attachment the Culver-Stearns Giant searchlight is certain to meet with an even greater demand than experienced this past year. The detachable mirror is priced at $1.50, making the total price of the Giant light, with mirror, $6.50.

PITTSBURG AUTO SHOW.

"Bigger and grander than ever" is the slogan that has been adopted by the Pittsburg Automobile Dealers' Association for the coming auto show that will be conducted under the auspices of the organization during the week of Oct. 14-21 in Motor Square Garden, Pittsburg.

The demand for space has already assured Manager John J. Bell that the expectations as indicated by the slogan will be exceeded. Room for 75 different makes has already been allotted, which is six more than were included in last year's exhibition. The total value of the exhibits will exceed $500,000 and over 32,000 yards of bunting is being used in carrying out an elaborate decorative scheme.

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Grab this money maker

EVERY FORD OWNER WANTS IT

My company guarantees the Myle-Mayker to add **15%** to **50%** to the gasoline mileage of any Ford. Guarantees that any Ford with the Myle-Mayker will throttle down to **less than 4 miles** per hour **on "high"**—practically be **free** from **carbon** deposits—**will run smoother, more silently,** more **flexibly**—will have **cooler engine** and be **easier to start**—will **pull better** on high gear.

Eugene F. Kline
President
Myle Mayker Co.

THE Myle Mayker

Copyright 1916, Myle-Mayker Company

is a great money maker. It's sold on 30 days' trial.

You put it out on 30 days' trial
It actually sells itself

The Myle-Mayker makes good. That's why we make it so easy for the trial. It makes good on every Ford car. It is not affected by cold, dampness, dryness or other conditions. The position of the car does not affect it. It cannot get out of adjustment or fail to work. Nothing about it to wear out or fail. No owner is afraid to make the trial, because there's no hole to tap in manifold or anywhere else. Just get Ford owners to try it on the "30 days to make good" basis, and it will sell itself.

Send for a Myle-Mayker today
Use this coupon

Myle Mayker Co.
Dept. 9-J
323 E. 33rd St.
Chicago, Ill.

THE MYLE-MAYKER CO,
323 E. 33rd St., Chicago, Ill.

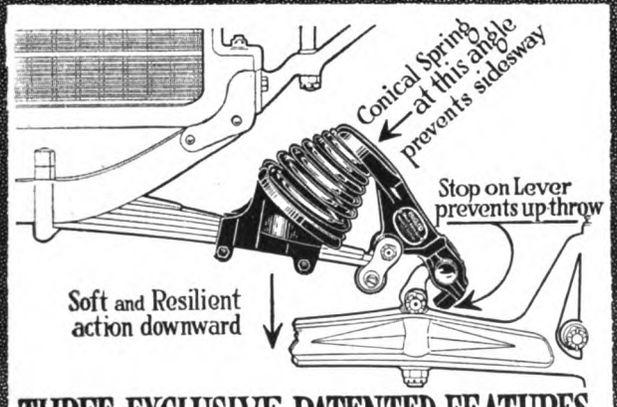
Send one of your Myle-Maykers, prepaid, with the understanding that you guarantee it, when attached to stock Ford carburetor as per instructions, to save gasoline, make the engine easier to start, smoother running, freer from carbon. If not satisfied, I can return at the end of ten days at your expense, otherwise I agree to pay for it at regular price, less your usual trade discount. I am a dealer, and am ordering this Myle-Mayker to test it out with the idea of ordering a trial dozen or more, if it proves satisfactory. Send prices and full information.

Name of dealer .....

Address in full .....

.....

HASSLER
Shock Absorber
For FORD Cars



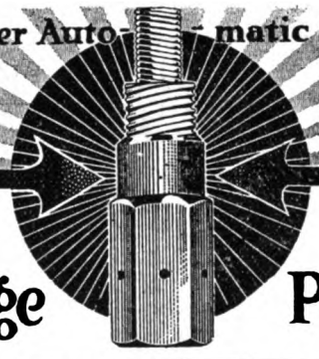
THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"
— 100000 FORD OWNERS RECOMMEND IT —
WRITE FOR DEALERS TRIAL SET PROPOSITION

Robert H. Hassler, Inc.
Indianapolis, Ind.

$15 for a Set of Four

The Pioneer Auto- -matic Gas Saver



More Mileage **More Power**

AEROFRAM
Gas Saver

The Simplest and Most Efficient of All Gas-Saving Devices—Effects a Notable Improvement in Engine Performance—Anybody Can Install It in Ten Minutes—For All Cars.

Absolutely Automatic—Nothing to Adjust

Dealers: The Aerofram actually does the work that more expensive gas-savers claim to do. When you offer it to your customer you do so with the certainty that he cannot duplicate its efficiency with any other device at ten times the price. It will positively add two to six miles per gallon—in many cases more. Hundreds of users have testified to this. Write for details. Liberal selling terms.

Price in Canada $1.50

$1 The Aerofram Co. $1
107 Massachusetts Avenue. Boston, Mass.

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TO KEEP THE BODY OF YOUR AUTOMOBILE SHINING LIKE A MIRROR USE BLUE RIBBON AUTO BODY GLOSS AND FURNITURE POLISH

Absolutely contains no WAXEY or GUMMY substances.
Does not coat the surfaces and catches no dust.

BLUE RIBBON AUTO BODY GLOSS

is a scientific "tonic" which revives and renews all highly finished, varnished and enamelled surfaces. It keeps the finish flexible and full of life, which prevents the original gloss from becoming dead or dull looking.

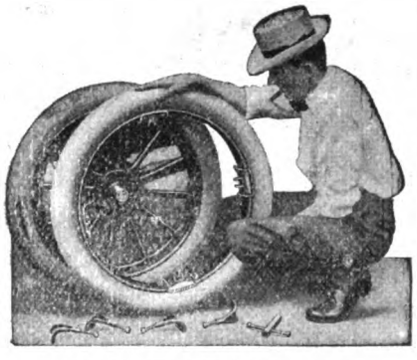
WAX and GUM preparations simply coat the surface. The coating soon becomes dead. Then it cannot be removed. This ruins the original gloss and finish. Lastly, repainting and refinishing is the only remedy. Ask any expert or practical painter or chemist.

BLUE RIBBON AUTO BODY GLOSS cleans, renews and repolishes or revives the ORIGINAL FACTORY GLOSS.

Ask Your Jobbers or Dealers or Write Us.

INTERNATIONAL METAL POLISH COMPANY, INDIANAPOLIS, IND.

Manufacturers of the Famous Blue Ribbon Polishes and Soaps.



METHOD OF MOUNTING

TWIN-RIM

Patented Feb., 1916

A DEMOUNTABLE RIM FOR

FORD CARS

And All Other 30"x3½" or 30"x3" Clincher Rims

Thousands of Ford Car owners have equipped their cars with this invention and the universal verdict is: "They would not be without the TWIN-RIM."

YOU DON'T HAVE TO REMOVE DAMAGED TIRES

TWIN-RIM $5.00

DEALERS AND AGENTS WANTED

MOUNTED READY TO RUN

TWIN RIM CO., Inc., - - - - - - - 103 Massachusetts Avenue, Boston, Mass.

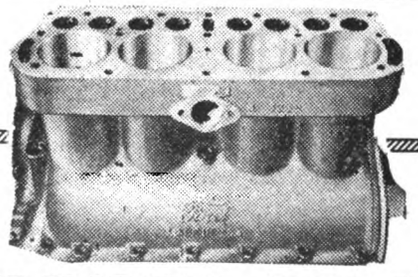
Automobile Mailing Lists 1916

28,108	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
8,123	Ford Dealers, price $17.50, or $3 per M by states.
285	Ford Dealers, Canada, $1.50.
28,463	Auto Garages, price $40, or $2.50 per M by states
29,306	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
45,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
940	Auto Supply Jobbers, price $4 for the list.
4,093	Auto Tire Dealers, price $3 per M.
2,404,150	Auto Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.
643,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

Write for particulars of any list you want.

A. F. WILLIAMS, Manager,

Phone Franklin 1182. 164 West Adams St., CHICAGO



CYLINDER BORING

AUTO, MOTORCYCLE, STATIONARY AND TRACTOR ENGINE CYLINDERS REBORED

Write for prices *Special offer to dealers*

Motorcycle Accessories Company

ST. PAUL, MINN.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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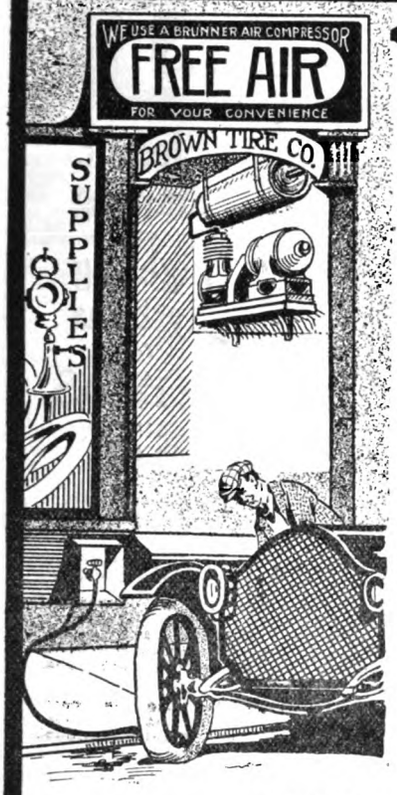


BRUNNER Air COMPRESSORS

Have been consistently demonstrating their sterling worth in the garage and repair shop ever since the garage business has been a business—You cannot go wrong with a Brunner.

Yes the Brunner Air Compressor has been making good consistently and persistently ever since the garage business has been a business, it was designed and built for the garageman's requirements, it has been developed with the garage business. When the Brunner was put on the market the garage air compressors could have been counted on the fingers of one hand, today they could not be counted on the legs of a centipede. The fact that there are more Brunners sold today for garage use than there are sold compressors of any other make for garage service and the fact that the Brunner has persistently made good in the face of competition without end should be convincing proof that it is the logical garage air compressor for you to buy.

You cannot afford to overlook the ever growing demand for Brunner service by the Brunner wise motorist

He is ever on the alert for the Brunner sign, he wants Brunner Service, it means the same to him as clean gasolene or a good tire, and just as long as you struggle along without a Brunner Air Compressor in your garage and a Brunner Sign on your garage just so long is the garageman down the line with the Brunner Sign going to have a little something on you in the way of competition. You need the trade of the Brunner wise motorist and you can secure it by installing a Brunner Air Compressor in your garage and displaying a Brunner Sign on your garage—he follows the sign.

Write for Catalog and Garageman's Handbook on Compressed Air and let us send you the name of the Brunner Jobber covering your town.

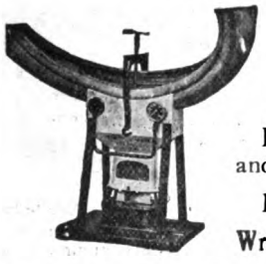
BRUNNER MANUFACTURING COMPANY

Main Office and Plant, Dept. A.
UTICA, N. Y.

Cincinnati Branch,
419 First National Bank Bldg., Cincinnati, Ohio

Will Pay For Itself In A Few Days

THE SUPERIOR VULCANIZER



Needs no experience to operate.

Repairs casings and tubes perfectly.

Inexpensive for car owners and garages.

Hundreds of satisfied users.

Write for description and prices.

LEE C. MAPES, C-16 Fulton Ave., Rochester, N. Y.

Wayne

CURB PUMPS

Have won the popular favor of posted motorists

BECAUSE

They appreciate pure, clean gas, quick service and the exclusive Wayne Clock-Dial Register that shows exactly how much gas they are getting.

Send for our circulars and easy-terms proposition.

WAYNE OIL TANK & PUMP CO.
2 Canal Street **Ft. Wayne, Indiana**
Canadian Office: 1 Wabash Avenue, Toronto, Ontario

BETTER, CHEAPER THAN PLATINUM

Stock No. 1 Size No. 9 Ga. wire 10/64" deep — $1.00
Stock No 2 Size No. 12 Ga. wire 7/64" deep — $0.75
Stock No. 3 Size No. 9 Ga. wire 3/64" deep — $0.75

NEW ERA

INDESTRUCTIBLE

Sparking Points

For all Coils, Magnetos and Vibrators

Price only $1.00 and 75c (according to size) and Guaranteed for Life

Many Testimonials Like This

Elkart, Ind., Dec. 19.

Gentlemen:—Your favor of the 7th inst. has been received. We have used four of your sparking points on two different machines, both running over five thousand miles and so far they seem to be as good as the platinum points. One of these magnetos was on a shaft which made it run about 35 miles per hour, and the other on another shaft which made it run at the rate of about 15 miles per hour.

Yours very truly,
CHICAGO TELEPHONE SUPPLY CO., By A. J. RIGGS, Secretary.

We guarantee to replace without charge or question any New Era Sparking Point, no matter where purchased or what abuse same has been given.

Twice the Regular Discount to Dealers

NEW ERA SPRING & SPECIALTY COMPANY
877 Woodward Avenue **Detroit, Michigan**

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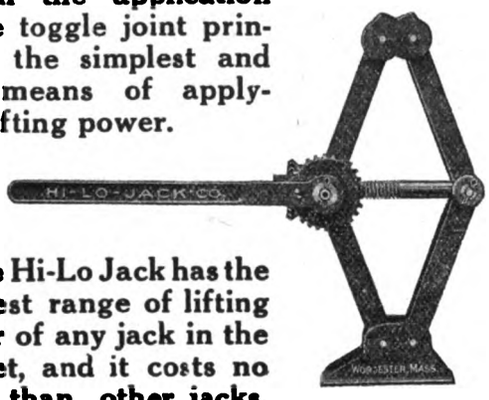
HI-LO JACK

The Best Money Can Buy

The Hi-Lo Jack is BUILT RIGHT. Scientists designed it and expert workmen constructed it. The secret of its wonderful power, capacity and utility lies in the application of the toggle joint principle, the simplest and best means of applying lifting power.



The Hi-Lo Jack has the greatest range of lifting power of any jack in the market, and it costs no more than other jacks. It begins to apply its power at 5", increasing it at the rate of 2000 pounds to every inch of its range of lift. It cannot collapse even under more than its maximum load; it is absolutely fool proof; and it is the easiest operated jack made.

The Hi-Lo Jack is simplicity itself. Anyone can work it, and lift the heaviest touring car or the heaviest truck, when fully loaded. It can be folded up like a jack-knife and stored any place in a car any other jack can be carried.

Its capacity and utility is practically unlimited. The limit of its lift is either 17" or 19", according to the type of jack, and it can be placed under the lowest motor car axle made.

None but the best materials enter into its make-up. It is fully covered by a comprehensive guarantee which protects both the car owner and the dealer.

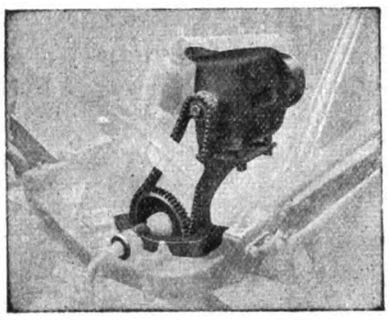
As a Jack Proposition, Jobbers and Dealers can find none better than the Hi-Lo Jack. Its unusual appearance attracts buyers and its efficiency and durability make sales. It is priced right to allow the dealer to obtain a liberal profit and still compete successfully with other jacks.

Send today for detailed information and special prices to the trade.

HI-LO JACK COMPANY

141 Green Street
WORCESTER, MASS,

ELECTRIC
ISCO
SYSTEM



Electric Starting and Lighting Systems for FORDS $75

IT SPINS THE MOTOR

There is ALWAYS a start in the Disco, no matter how cold the day. It doesn't merely turn the motor, it SPINS it.

The Disco is a single unit system, simple, light and compact. It operates with a 12-volt current, insuring a start every time. Its patent yoke bracket maintains perfect alignment and eliminates chain breakage. It is easily accessible, and does not interfere with the accessibility of the Ford engine.

Eighteen American cars are using the Disco as regular equipment. We have a proposition to make to owners, dealers, jobbers and manufacturers. Early requests for territory will be given preference.

Write or Wire Today

Disco Electric Starter Corporation
DETROIT, U. S. A.

McCORMICK ALLMAND WEATHERSTRIP
PATENTED

"Stops that Leak thru the Windshield"

Closes space between panes, making it absolutely RAIN, DUST and WIND-PROOF.

Adjustable to any thickness of glass. Easily removed or replaced. Does not obstruct vision. Less than half inch wide.

$1.00

Write for dealers' proposition
THE ROBINSON MANUFACTURING CO., Inc
501 Lincoln Bldg. Louisville, Ky.

Repair Tires—Make Money

Don't continue to plod along and be content with just a storage business with occasional sale of gasoline and oil. The garage that is making money today is the one that is vulcanizing tires with a

SHALER VULCANIZER

You don't have to go out and solicit business. The auto owner when he comes to you for supplies, gasoline, oil, etc., and knows you can repair his tires, will give you the job.

Give your customers this complete service they like, be ready to repair their tires, make money for yourself.

Anybody who can clean or adjust a car can operate a Shaler because of the simplicity of **Shaler Wrapped Tread Method** and **Automatic Heat Control.**

Catalog Free Send at once for the new Shaler catalog, the most complete Vulcanizer Catalog ever published. Get the low discount price for the Shaler garage type pictured here. We will also send you our book "Common Sense about Tire Repairs" for *reference* only.

C. A. SHALER & CO., 264 Fourth St., Waupun, Wis.
The Largest Manufacturers of Vulcanizers in the World

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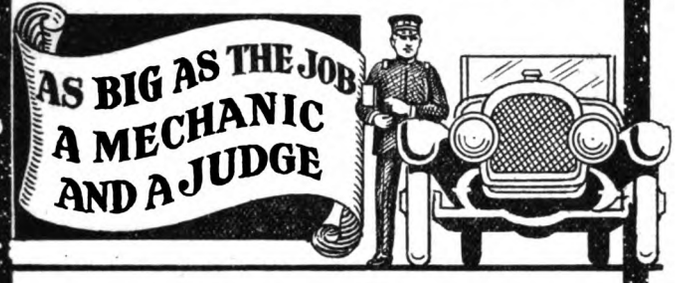


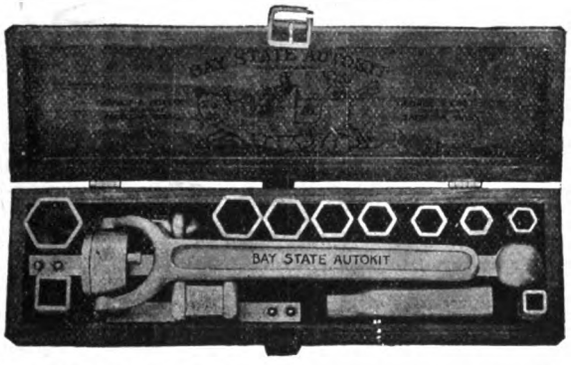
WHERE THE REPAIRER FITS

There is in every garage, repair or machine shop one or several repairers who have steady work, good pay, know what to do and how to do it and do first-class jobs.

While classed as mechanics, these men are specialists: Because they know their work such men insist that they have tools that are suited for their purposes. With good tool and shop equipment these men save time, labor and overhead expense; they earn big money for themselves and greater profits for their employers.

Repairers who use makeshift tools kill time, work harder, do not satisfy the customers, and the poor work results in lost patronage and lessened profit.

Be a Specialist---Use the Right Tools ---START TODAY!



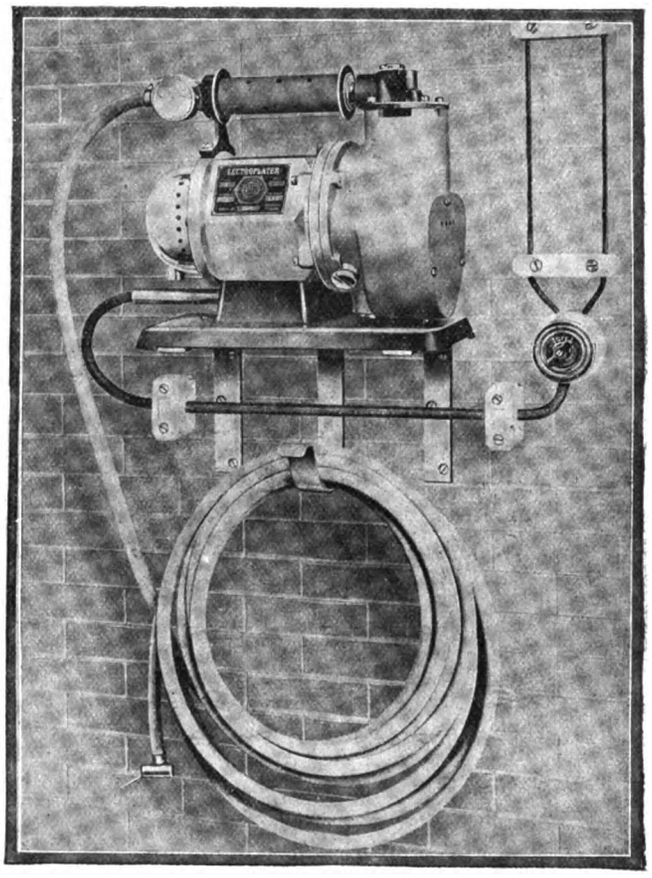
Set No. 1, 31 Sockets - - -	**$10.00**
Set No. 2, 12 Sockets - - -	**7.50**
Set No. 3, 11 Sockets (For Ford Cars)	**4.00**

All Bay State Autokits are specially made and selected tools made of finest material and guaranteed for the service specified. With the swivelling reversible ratchet handle and shank in the set any nut, bolt or cap screw, on any car, can be reached from any angle.

DEALERS AND JOBBERS: There is an Autokit for the car, garage, or shop, complete in every detail. Write for catalogue and prices.

GEORGE A. CUTTER,
TAUNTON SALES AGENT **MASS.**

LECTROFLATER AIR SERVICE —CHEAPEST FOR GARAGES



Showing Model No. 2 Garage Pump with wall mounting. Price complete with all necessary brackets $65.00.

Quick Acting! Economical! Handy!

With this pump you can inflate a 37x5 tire from flat to full pressure in less than 4 minutes.

Electrically driven—it costs less than 1/10 of one cent to inflate the largest tire—less than the cost of the gasoline consumed by an ordinary engine pump inflating the same tire.

Not only cheaper, but cleaner and more convenient, more efficient and more dependable.

125 air pressure guaranteed without heating.

All lubrication is automatic from a central source by capillary system.

All working parts enclosed in a single housing and automatically cooled by a patented cooling system that requires no attention.

Can be used in combination with storage tank when desired.

Just the pump for garages, service stations, tire dealers and repair shops.

Actual service has proven the LECTROFLATER absolutely reliable and far more economical than other tire inflation systems.

Prices $45. to $80. *Depending Upon Style and Size —F. O. B. Baltimore.*

Including gauge, high pressure hose, attachment plug, quick acting coupling and long electric cord.

THE BLACK & DECKER MFG. CO.
Manufacturers of Portable Electric Tools and Special Machinery of Quality.
111 S. CALVERT ST., BALTIMORE, MD.

DISTRICT REPRESENTATIVES WANTED
Write for Details. *Interesting Proposition.*

LECTROFLATER
ELECTRIC AIR PUMPS

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WILMO

Gas Saving Manifolds

The WILMO vaporizes all the remaining gas particles right at the valve openings, therefore makes your car run smooth at all speeds.

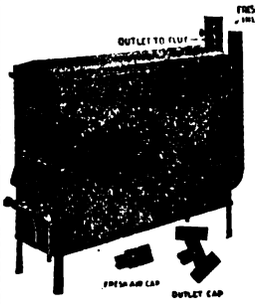
SOLD BY ALL DEALERS

Gillette Motors Company

KING C. GILLETTE, President

MISHAWAKA, - - - - INDIANA

Successors to Wilmo & Amplex Co.



A "SUPERIOR" or "COSY"

Safe Garage Heater

Will heat any garage safely and well so owner can use his car all year 'round and and keep it in best condition.

Dealers Make Money Selling These Heaters and Incidentally Increase Their Other Sales.

WRITE FOR TERMS, ETC.,

Superior Manufacturing Company

N. S., PITTSBURGH, PA.

Add to Garage Profits by Oxy-Acetylene Welding

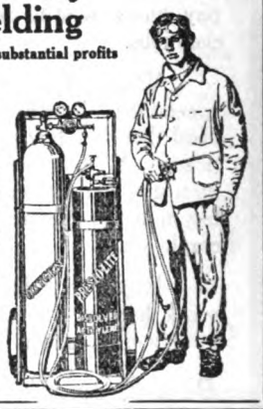
Savings made please your patrons and pay good substantial profits

PREST-O-LITE

Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for $60.00. (Canada $75). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.



The Prest-O-Lite Co., Inc.
The world's Largest Makers of Dissolved Acetylene.
309 Speedway, Indianapolis, Ind. — Canadian Office and Factory, Merritton, Ontario

THE

ACME

Ford Steering Controller

PRICE COMPLETE, $3.50

The ACME STEERING CONTROLLER is a simple and substantial Accessory, of practical value to all Ford Car Owners.

By the pressure of two coil springs acting upon the tie rod, the car automatically tends to a straight course, regardless of holes and obstructions, thereby relieving the strain of driving.

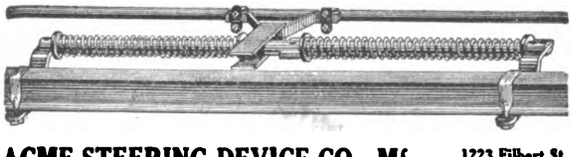
The ACME STEERING CONTROLLER is the only practical steering device for Ford Cars on the market. As proof of this not 1% of those sold to date have been returned. However, the Manufacturers stand ready to take back and make refund to the dealer for any machine returned.

It is easily seen from the description what the device will do, and the Ford Car Owner readily buys because of its simplicity and apparent effectiveness.

Have the device in stock and be in line for sales.

Be the first dealer to introduce the ACME STEERING DEVICE in your territory, and gain this advertising advantage.

Write to your jobber or to us for the discount to dealers.



ACME STEERING DEVICE CO., Mfrs., 1223 Filbert St. Philadelphia, Pa.

FEDERAL

Double-Cable-Base

TIRES

FOR

"Extra Service"

FEDERAL RUBBER MFG. CO.
MILWAUKEE, WIS.

The Manley Garage and Machine Shop Equipment

Designed and built to give economical, dependable service. Time and labor saving equipment that permits automobile repairer to do any size job right and quickly.

Air Compressors ***Portable Cranes***
Arbor Presses ***Screw Presses***

Our complete line is fully described, illustrated and priced in our catalogue. Every jobber, dealer, garage and repair shop man should have a copy. Free at request.

UNITED ENGINE AND MFG. CO.

HANOVER, PA.

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Harvey RACINE

Boltless Auto Springs Are Best for Replacements

because they mean absolute, lasting positive satisfaction to the car owner—regardless of the make of his car.

Harvey Springs are the result of the best spring manufacturing brains in America. They are made of finest selected steel and the plates are scientifically formed and tempered on the Harvey Patented Machines which make them with an accuracy and uniformity not possible to obtain with hand labor. They are

Guaranteed From End to End

No Hole At Center-No Weak Spots Anywhere

FREE

The 1916 Harvey Spring Book is the most complete ever published. It contains a complete list of prices for over 600 of the leading makes and models of cars—gives sizes, weights, measurements, prices, etc. Dealers, garagemen and repairmen need this book. We mail it free.

There's a Harvey Boltless Auto Spring for every make and model of car and we carry over 15,000 springs in stock at the factory for quick shipment. Harvey Springs are also carried in stock by the jobbers whose names are shown in list herewith. Order from nearest point to avoid delays.

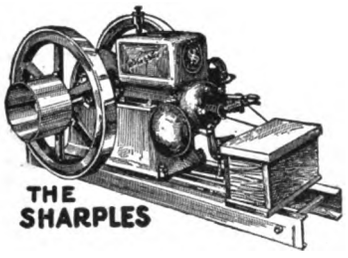
The Harvey Spring Co.

851 17th Street Racine, Wis.

HARVEY JOBBERS

Abilene, Tex.,	Ed. S. Hughes & Co.
Albuquerque, N. M.	J. Korber & Co.
Atlanta,	Alexander-Seewald Co.
Augusta, Ga.,	H. C. Tennent Sup. Co.
Austin, Tex.,	W. T. Wroe & Sons
Baltimore,	Henry Keidel & Co.
Billings, Mont.	Northwestern Auto Sup. Co.
Birmingham, Ala.,	Drennen Motor Car Co.
Bluefield, W. V.,	W. H. Harry & Co.
Charleston, S. C.,	Cameron & Barkley Co.
Chattanooga,	Southern Auto Supply Co.
Chicago,	Maremont Mfg. Co.
Cincinnati,	Wheel, Top & Hdw. Co.
Clinton, Okla.,	Welch Wholesale Hdw. Co.
Dallas,	Ferris-Dunlap Auto Sup. Co.
Danville, Va.,	Piedmont Hdw. Co.
Denver,	M. L. Foss
Duluth,	Kelley Hdw. Co.
Ft. Smith, Ark.,	Meister Bros. & Bracht
Ft. Wayne, Ind.,	Mossman, Yarnelle & Co.
Hutchinson, Kan.,	The Auto Supply Co.
Kansas City,	The Bonniwell-Calvin Iron Co.
Knoxville, Tenn.,	C. M. McClung & Co.
Lincoln, Neb.,	Korsemeyer & Co.
Little Rock,	Rose-Lyon Hdw. Co.
Louisville,	Geo. Dehler, Jr.
Macon, Ga.,	S. S. Parmelee Co.
Memphis,	Ozburn Auto Supply Co.
Milwaukee,	Shadbolt & Boyd Iron Co.
Minneapolis,	Williams Hdw. Co.
Monroe, La.,	Monroe Hdw. Co.
Montgomery, Ala.,	Loeb Hardware Co.
Norfolk,	W. H. Grover
Oklahoma City,	Severin Tire & Sup. Co.
Paris, Tex.,	W. F. Dulaney & Sons
Peoria,	Cummings & Emerson
Portland, Ore.,	J. E. Haseltine & Co.
Richmond, Va.,	Talman Auto Supply Co.
Richmond, Ind.,	Jones Hardware Co.
Roanoke,	Meadows-Price Co.
Salt Lake City,	The Intermountain Elec. Co.
San Francisco,	Waterhouse & Lester Co,
San Francisco,	McCoy Motor Sup. Co.
Seattle,	Polson Implement Co.
Seattle,	Whiton Hardware Co.
Shreveport,	W. K. Henderson, Jr.
Sioux Falls,	The L. & L. Motor Sup. Co.
Tacoma, Wash.,	The Automobile Sup. Co.
Tampa,	C. W. Greene Co.
Toledo,	The Roberts-Toledo Auto Co.
Washington, N. C.,	Harris Hdw. Co.

Harvey RACINE



Runs in the Rain

Water has absolutely no effect on our magneto—the Sharples Engine will run perfectly in the pouring rain. Furthermore, the engine makes just as hot a spark when running very, very slowly (for instance when the engine is being started) as when it is running full speed.

The Sharples Engine has Double-Ignition. It has two complete, separate sparking systems, like the best foreign automobiles. **Either** spark will run the engine. **Both** sparks can be used for easy starting. This makes the engine practically trouble-proof.

The New Sharples Double-Ignition

GASOLINE ENGINE

is solidly built for very heavy duty and mounted on non-decaying skids. Gasoline tank is located at lowest point. Gasoline can't possibly drain out. It's pumped up by **suction-feed.** Endorsed by fire underwriters. Speed instantly changed by shifting lever. Doubly inspected and **guaranteed.** Four sizes, 2½ to 9 horse power.

Our liberal contract offers big opportunity to live dealers.

The Sharples Separator Company

Also Sharples Milkers and Sharples Separators

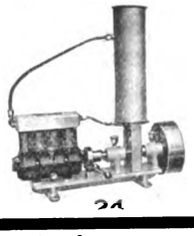
WEST CHESTER, PA.

CHICAGO SAN FRANCISCO PORTLAND TORONTO

10

40

99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LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

FREE AIR SERVICE CURB STANDS

Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. Save Money.

LIPMAN AIR APPLIANCE CO.

199 Pleasant St., BELOIT, WIS.

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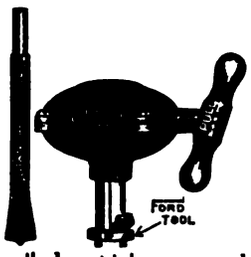
MOSCO

Mosco Valve Grinder

List Price $1.50



A positive, accurate, quick and easily operated valve grinder. A perfect machine, as easily operated as any hand tool. Anyone can use it and do the highest grade work, and obtain a superior finish on valve seats.

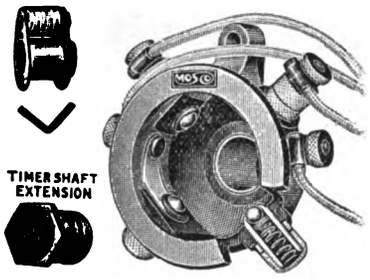
To operate, the handle is pulled, which rotates the tool and valve; a spring on chain pulley pulls in the opposite direction, which reverses the rotation of the valve.

It easily fits in the tool box. For repairers it is a time and labor saving tool. When ordering state make, model and year of car or motor.

BEMUS BALL CONTACT TIMER

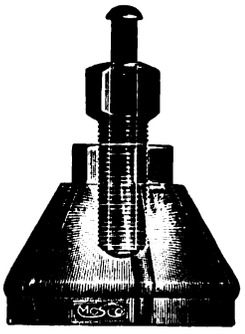
FORD CAR TYPE

List Price $2.50



The remarkable service giving qualities of the 1915 Bemus Timers have even been further improved in the 1916 model. With top wire connections, offset balls, extra long non-wearing roller and reinforced arm. This makes the present model the perfect timer and an attachment that the jobber and dealer can sell with entire satisfaction to all buyers.

MOSCO WHEEL PULLER



A loose plunger wheel puller, for Ford, Overland, Buick, Maxwell, Saxon and Chevrolet cars. A powerful one-man tool with long service life and one that will save time and labor.

It sells at a price with discounts that will interest all the trade.

WRITE FOR THE LATEST MOSCO CATALOG AND TRADE DISCOUNT SHEETS.

Motor Specialties Co.

WALTHAM MASSACHUSETTS

Hire This Salesman

He works without salary, never takes a vacation, keeps your stock in order, is always quiet, courteous, dignified—a good advertiser and an asset to any dealer's store.

Hire this Salesman

Thousands of dollars of good, easy profits are missed every year by dealers who neglect to meet their customer's requirements on springs for replacement. Broken springs are as certain as death and taxes. Stock an assortment of

We furnish this Silent Salesman Spring Rack free. A large rack with capacity of 64 springs given to dealers with an assortment order for 25 or more Vulcan Springs. A smaller rack with capacity of 32 springs on an order for 12 or more Vulcan Springs.

VULCAN QUALITY SPRINGS

for all the cars in your territory. Display them prominently on the Vulcan Display Rack. Put it in your window. Every car owner who passes, as well as your regular customers, will soon remember that you are local headquarters for good springs.

Write today

Don't fail to get our liberal dealers' proposition and discounts. If you are not fully convinced don't hesitate to say so. We will tell you what other dealers have done.

Address the nearest branch

JENKINS VULCAN SPRING CO.

1402 Chestnut Street, St. Louis, Mo.
29 Caldwell St., Sumter, S. Car.
708 Commerce St, Fort Worth, Tex.

EQUIP YOUR CAR NOW WITH A

Crane PATENTED

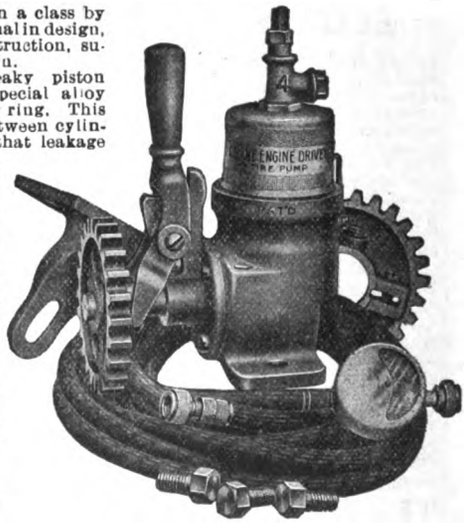
Engine Driven Tire Pump

The Crane is in a class by itself. It is original in design, different in construction, superior in operation.

Instead of leaky piston rings it has a special alloy patented packing ring. This is so arranged between cylinder and piston that leakage is impossible and oil is prevented from getting into the compression chamber.

The result is 97% efficiency instead of 65%, and the pumpage of air into the tires that is free from oil spray.

The Crane is the only engine-driven pump of which this can be said. It is also quick in action, small, compact, light weight, well lubricated and easy to attach.



PRICE

$8.00 Complete

Write for our dealers' proposition

BAY STATE PUMP CO.

Boston, Mass.

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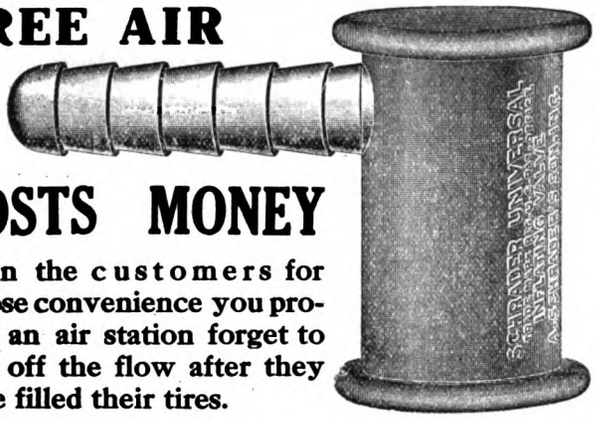
Fawsco Fuses
FOR ALL AUTOMOBILES

J. H. Faw Inc.
MAIN OFFICE 41 WARREN ST.
NEW YORK, CITY.
BRANCH ATLANTA, GA.

WE MANUFACTURE AND DISTRIBUTE
13 STANDARD LINES

FREE AIR



COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Automatic Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from 1-4 in. to 5-8 in.

PRICE ONE DOLLAR

Manufactured by

A. SCHRADER'S SON, Inc.

800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

Nine out of ten of all the racing drivers in all the important races held during the past season have used

DIXON'S Graphite Automobile Lubricants

Our lubricants are not an experiment in the racing and pleasure car world. They are a recognized asset to any automobile owner.

Send for booklet No. 49 G.

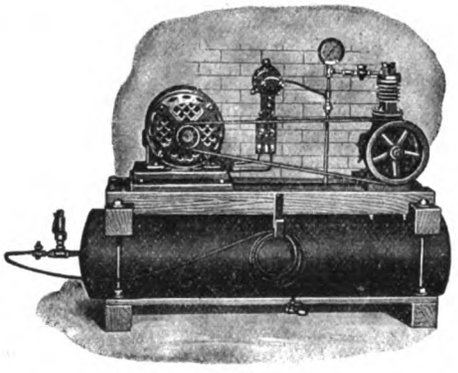
Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

ESTABLISHED 1827

G-162

GARDNER
STATIONARY FREE AIR UNIT



FOR

SERVICE ECONOMY DEPENDABILITY

A Gardner Outfit of this type installed in *your* garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY

126 Williamson St., Quincy, Ill.

Singer Bldg, New York City — Fisher Bldg, Chicago — 5 First St., San Francisco

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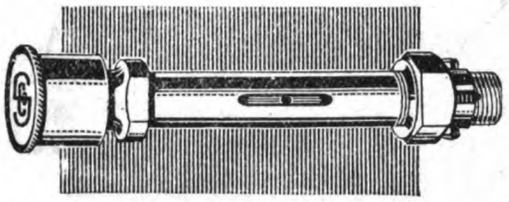
STEVENS
NEW YORK

Shackle Bolts



Stevens Shackle Bolts are **good** bolts—high in quality but not in price. Made of open-hearth steel, carefully machined, hardened and polished. Complete with nickeled grease-cup and castellated nut.

List Price, Each 40 cents

Liberal discount from your jobber

The leading jobbers handle Stevens accessories, for our accessories are honestly made, honestly priced. Every one fills a need in the auto business. They are not "catch penny" novelties—but steady, trade building accessories.

STEVENS & CO.
375 BROADWAY
NEW YORK

BOWSER

Will save ALL waste and add to your profit

If you operate your garage without these two outfits you are not only losing part of your profits on the gas and oil you sell, but you're letting the biggest share of the auto trade drive past without even stopping.

If you are using one outfit without the other it's about like buying a suit of clothes without the pants—your equipment is not complete.

You can easily pay for both of these curb money makers with what it costs you now to do without them.

S. F. Bowser & Co., Inc.
Fort Wayne, Ind.
Sales Offices in All Centers
Representatives Everywhere.

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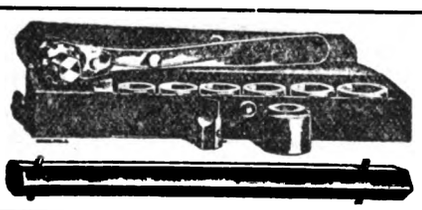


DON'T USE A COLD CHISEL

USE THE LANE UNIQUE RATCHET WRENCH

FOR CLOSE AND DIFFICULT WORK

IT TURNS NUTS VERY CLOSE TO THE WALL.

is easily and quickly reversed, sockets will not break or split and fits three standards and automobile nuts.

MADE FOR HEAVY SERVICE

Wrench is machine made. Sockets are turned from steel bars, cold broached and case hardened. Fully warranted. Every repairman should have a UNIQUE RATCHET WRENCH SET.

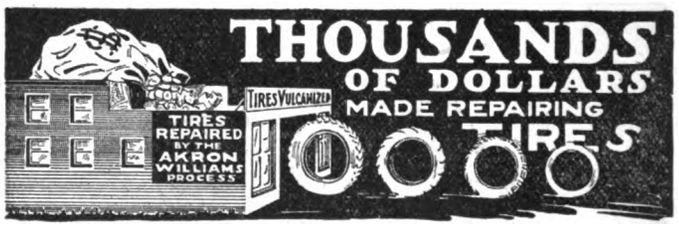
SPECIAL SETS FOR FORD CARS

Dealers, Jobbers and Garagemen, Write for Trade Discounts.

STANDARD SET Contains:
1 Handle 7 inches in length.
2 Screw driver bits.
7 Sockets to fit semi-finished hex. nuts as follows:
U. S. Standards from 1-4 in. to 1-2 in.
A. L. A. M. Standards from 5-16 in. to 11-16 in.
Cap screw heads from 5-16 in. to 5-8 in.
Price in leather case $2.50.

THE FORD SET Contains:
1 Handle 7 inches in length
2 Screw-driver bits.
1 Extension bar 7 in. in length.
SIX SOCKETS to fit all nuts and bolt heads on Ford car, including the cylinder head.
Price in leather case $3.00.
Sold by dealers everywhere.

WILL B. LANE, Manufacturer, 180 N. Dearborn Street, Chicago, Ill.



You can make anywhere from $1500 to $3000 a year above expenses. Your investment to start is small, returns are quick and income cash. Profits are large on every job. The Tire repair business is growing every year. Every city and town offers opportunity for you. Buy only an

AKRON-WILLIAMS TIRE REPAIR EQUIPMENT

The better your equipment, the better your work and the greater your volume of business. Start right. Use equipment which is

Endorsed by 30 Leading Tire Manufacturers We are making an unusual offer to everybody who buys our equipment. You can become a tire repair expert by our plan.

SEND FOR OUR 30 DAY SCHOOL PLAN

You start right. No experimenting. No failures. You become a practical, first-class repair man.

SEND FOR CATALOG NO. 12

WILLIAMS FOUNDRY & MACHINE COMPANY
ASH STREET, AKRON, OHIO

WATERHOUSE & LESTER CO.
Exclusive California Distributors, San Francisco and Los Angeles

The Automobile Journal

A magazine that is read by more than 20,000 car owners every issue.

It Will Interest You—

Send for sample copy. Times Bldg., Pawt., R. I.

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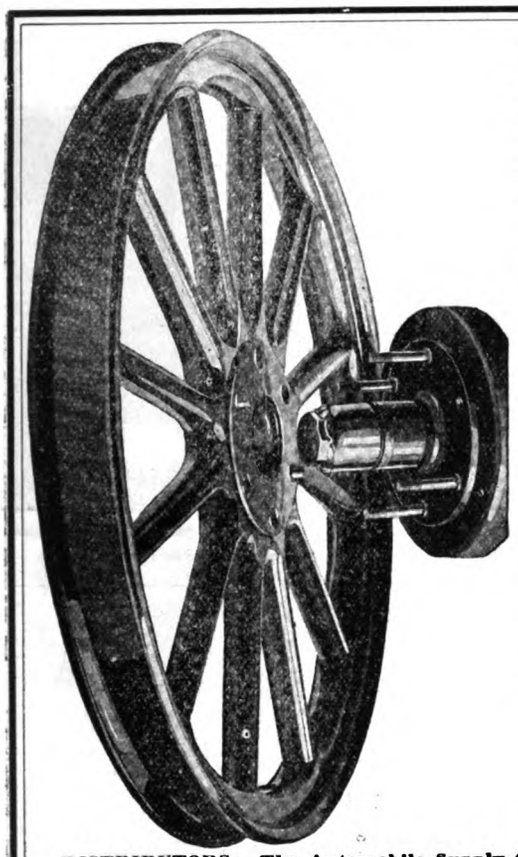


Make Ford Wheels Demountable

Change the wheel instead of the tire. Carry a spare wheel with a tire already mounted. The change can be made in two minutes.

Standard Demountable Wheel Set

Equips the regular Ford car wheels so they are demountable and interchangeable, and gives one spare wheel on which an extra tire is carried inflated. It consists of four special steel plates that are attached to the insides of the wheels on the car and the necessary special bolts, and extra wheel complete. No machine work whatever and no tools needed but a wrench to install the plates. The change can be made in an hour.

The driver makes the tire change by jacking the car, loosening four bolts, removing the wheel, putting on the spare wheel, tightening the nuts and strapping on the wheel removed. Contrast this with the change of any demountable rim.

LIST PRICE $12

JOBBERS AND DEALERS

Write or wire for special proposition. This is the newest and fastest selling Ford car equipment in the market. It will be a leading line, sells the year through, and will bring big profits.

STANDARD AUTO ACCESSORY CO.
Leipsic Ohio

DISTRIBUTORS:—The Automobile Supply Co., 1335 Michigan Blvd., Chicago, Ill. Chanslor & Lyon Co., San Francisco, Cal. Interstate Electric Co., New Orleans, La. The Manufacturers Supplies Co., Cherry and Juniper Sts., Philadelphia, Pa. Western Motor Supply Co., Minneapolis, Minn. Boice-Perrine Co., 64 Brookline Ave., Boston, Mass. A. J. Picard & Co., 1720 Broadway, New York, N. Y. Joseph Strauss & Son, Buffalo, N. Y. The Automobile Sundries Co., 18 Broadway, N. Y., Exporters. The Canadian Fairbanks-Morse Co., Montreal, Canada.

SELL SULLIVAN TRUCKS

One of the few staple and practical trucks on the market.

Our selling policy and proposition is the most liberal ever offered to the trade.

One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
Rochester, New York

No. 20 FOR FORD CARS

The one practical shock absorber and Recoil Check. The principle is that of a steel wedge working between leaf springs.

NO BUMPS. NO SHOCKS.
Adjustable to all loads. Easy to attach. A wrench is the only tool necessary.

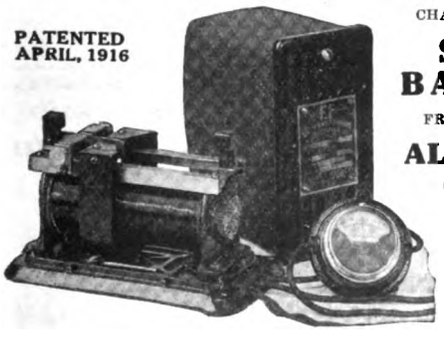
Set of Four $14
Write for special trade discount

SIMPLEX AUTO SPECIALTY CO.
731 Woodward Ave., Detroit, Mich.

Yankee Shock Absorber No. 20 for Large Cars, Set of Four $20

F-F MAGNETIC RECTIFIER

PATENTED APRIL, 1916



CHARGES 6 AND 8 VOLT
STORAGE BATTERIES
FROM 110 VOLT 60 CYCLE
ALTERNATING CURRENT
Full Wave Type
60 Watt Output

$15, Complete
F. O. B. Cleveland

Write Dept. C for Bulletin No. 8.

THE FRANCE MANUFACTURING CO., Cleveland, Ohio
Jobbers and Dealers Throughout United States and Canada

S. J. R.

BOULEVARD ROADSTER

$995

Four-Cylinder Motor,
3 1-8 x 4 1-2, en bloc
Cantilever Springs
110" Wheelbase
Houk Wire Wheels

Dealers: Write for Our Proposition.

S. J. R. Motor Co.
126 Massachusetts Avenue - - BOSTON, MASS

75-8

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HYATT
Roller Bearings
SERVICE BRANCHES
ATLANTA-DETROIT-BOSTON-SAN FRANCISCO-NEW YORK-LOS ANGELES-CHICAGO-MINNEAPOLIS-LONDON, ENG.

DEALERS—This Talk is Just for You

Send for a sample order. We make one price to all—the lowest.

Circulars and discount sheets on request.

You can save dollars and add to your prosperity by selling the Martin line of tire covers, water buckets, inner tube cases and similar goods.

These are made of heavy imitation leather. (Not of cheap oil cloth). They are the kind and quality that will please and satisfy the customer.

These values, for the price, are phenomenal.

For instance we make a price to you of 85 cents for our style D 34 by 4 tire cover for special hangers and wire wheels.

Our price to you for inner tube cases for single tubes is $8 per 100. They are of good quality water proof materials.

Prices and quality are what interest you. They show the live dealer where to buy to earn the big and easy profits.

We will quote you prices as low as those mentioned on our complete line. If you buy from us it will make 1916 a prosperous year for you.

Orders are not accepted from owners. These prices are exclusively for the trade.

THE MARTIN MFG. CO., Lancaster, Ohio

XCEL-O-LYTE

LIGHTING SYSTEMS
FORD, OVERLAND

An Exclusive Territory Proposition Open to Dealers.

Ball bearing dynamo. 6-80 storage battery, double-bulb headlamps, tail lamps, dash lamps, automatic cut-out, switch, bracket, driving transmission included in this high grade equipment.

Write for Agency Terms.

XCEL-O-LYTE COMPANY
1200 Xcelo Building
NEWTON, IOWA

HESS-BRIGHT
BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
The HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA, PENNSYLVANIA, U.S.A.

THE AUTOMOBILE JOURNAL

Is the oldest Automobile magazine published in America devoted wholly to owners of pleasure cars.

A quality magazine with prestige and circulation that brings results to advertisers.

TIMES BUILDING - - - - PAWTUCKET, R. I.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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You Need a Whitney Hand Miller

so you won't have to turn away profitable repair business, or turn it over to the machine shops.

With the WHITNEY you can handle the work right on the spot. You can avoid delays; you can accommodate customers.

The WHITNEY will measure up to about any milling job you'll be called on to do in the line of auto repairing. With it you can cut gears, sprockets, cams, do key-seating, straddle milling, profiling, slotting, slabbing and hundreds of other operations.

Simply drop a postal for catalog No. 3

THE WHITNEY MFG. CO., - - Hartford, Conn.

CHAINS-KEYS-HAND MILLING MACHINES

"NORMA"

"NORMA"

BALL BEARINGS

(PATENTED)

The difference in price between poor electrical accessories and the best ones is not all represented in the bearings. But—it is a significant fact that most ignition apparatus, lighting generators and starting motors with a service value actually represented by their price, carry "NORMA" Ball Bearings.

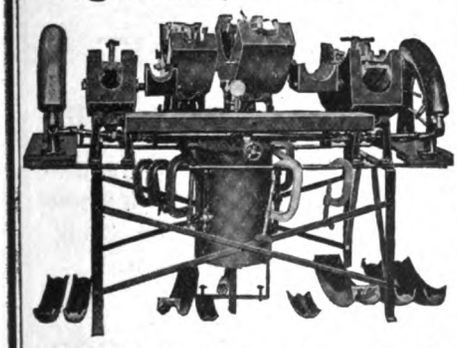
NEW DEPARTURE BALL BEARINGS

American Made FOR American Trade

QUALITY FIRST

THE NEW DEPARTURE MANUFACTURING CO. CONRAD PATENTS LICENSEE BRISTOL, CONN., U. S. A.

Big Money Double Treading



Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch inclusive.

VANDERPOOL CO., Springfield, Ohio

and 1044 S. Main Street, Los Angeles, Cal.

THE NORMA COMPANY OF AMERICA

1790 BROADWAY —— NEW YORK

BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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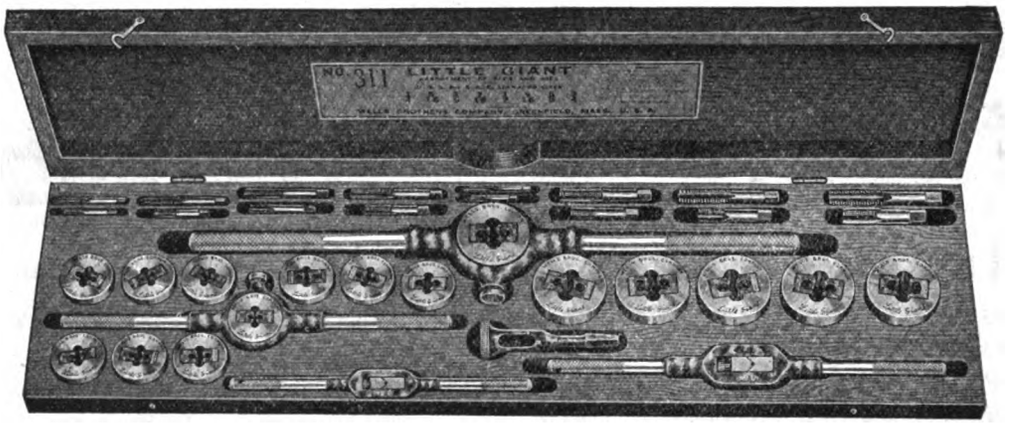
Little Giant Combination Screw Plates

Both United States and S. A. E. Standards



These assortments are particularly valuable in the automobile repair shop where a considerable amount of threading is done. Each die is contained in its own collet and is adjusted to size. There is also a Bit Brace Die Holder for cleaning up battered threads in hard-to-get-at-places.

Every need of the manufacturer, the garage and repair man, or the car owner who makes his own repairs, for tap and die assortments can be supplied from our big line.

Send to-day for the circulars "Tools for the Automobile" "First aid in the up-keep of the Automobile".

Greenfield Tap and Die Corporation, Greenfield, Mass.

GTD

New York Chicago Philadelphia Galt, Ontario

Time Savers

For Charging Storage Batteries

HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.

Made of steel—lead plated—may be used over and over again.

No. 13-A—¾" spread of jaws.
No. 16-A—1½" spread of jaws.

Your money back without quibble if not entirely satisfied.

Single Lots, Each 15c Lots of 10, Each 12 1-2c Lots of 100, Each 10c

R. S. MUELLER & CO., 431 High Ave., S. E., Cleveland, Ohio.

ELECTRIC GLUE POT

Mabey's Dry Heat Electric

GLUE POT

No flame; no soot or smoke. All danger of fire is eliminated.

Capacity	Price without cover
1 qt.	$ 9.50
2 qts.	11.00
3 qts	12.75
4 qts.	15.75

Century Automobile Cigar Lighter, Complete $1.00 Each, F. O. B. Indianapolis.

DEALERS—Write For Prices.

MABEY'S ELECTRIC & MFG. CO.

968 Ft. Wayne Ave Indianapolis, Ind.

STANDARD

FOR CHEVROLET "490"

78-18

Built on the tried and true centrifugal system which does not alter. Hand steady as a rock at all speeds.

Handsome nickel flush mounting makes it an ornament to your car.

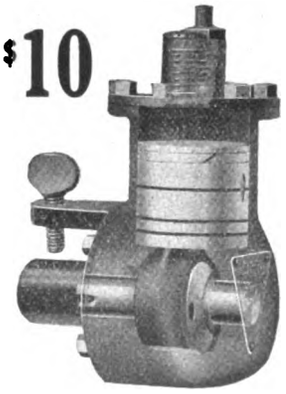
Guaranteed country-wide service assures your lasting satisfaction.

$15 *DEALERS write for proposition.*

STANDARD THERMOMETER CO.

65 Shirley Street Boston, Mass.

$10



YOU CAN SELL A

DETROIT Gearless Tire Pump

to 75 per cent. of the motorists to whom you show it. It goes on the crankshaft when you use it.

DETROIT ACCESSORIES CORP.

519 Hillger Avenue Detroit, Michigan

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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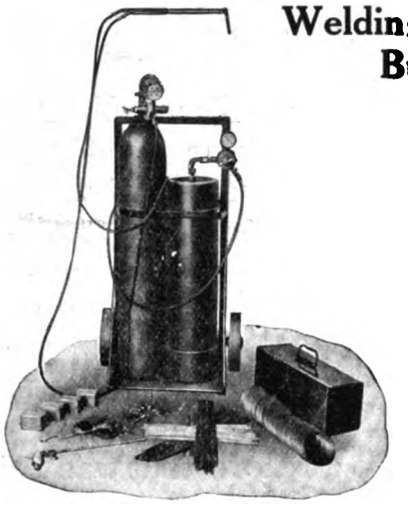
With the Approach of the Overhaulmg Season

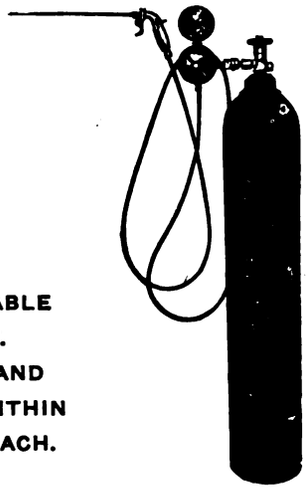
IT IS WELL TO INVESTIGATE ANY TOOLS THAT WILL SAVE YOU CONSIDERABLE TIME AND ALSO ENABLE YOU TO DO BETTER WORK

We Believe We Make SOMETHING You Can Use to Advantage



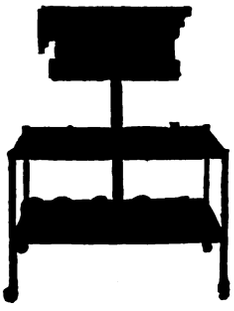
Welding, Steel Cutting, Brazing, Lead Burning and Carbon Removing

OUTFITS



Style A Welding and Carbon Removing Outfit with Truck.

Price $50. (Tanks not Included.)



TWO STEEL SHELVES, 30"x20".

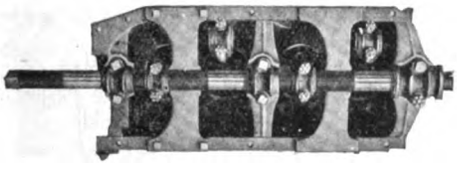
ADJUSTABLE POST. PARTS AND TOOLS WITHIN EASY REACH.

FORD MOTOR REPAIR STAND

Style A Carbon Removing Outfit. (Tank not Included.)

PISTONS

FOR THE FORD AND OTHER MAKES OF CARS

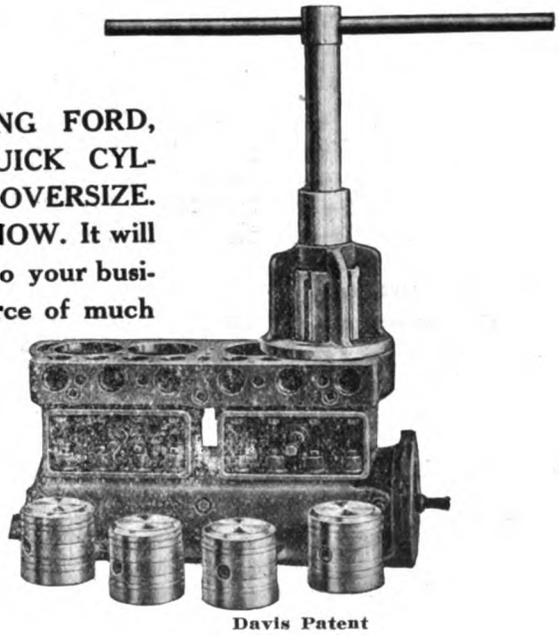


Two Adjustable Guides for Securing Perfect Alignment Furnished With Each Tool.

FORD CONNECTING ROD AND MAIN BEARING REAMER

Does away with the tedious method of scraping the bearings by hand, and with it can be done much more accurate work. Connecting rods are made to line perfectly with the cylinders. With this Reamer a job can be done in a very few minutes, leaving a smooth, glassy finish.

FOR REBORING FORD, METZ and BUICK CYLINDERS 1-32' OVERSIZE. Order this tool NOW. It will be a stimulant to your business and a source of much profit.



Davis Patent

FORD CYLINDER REAMER and JIG

A Necessity Wherever Repair Work on the Ford Is Done.

WRITE FOR GENERAL CATALOGUE.

THE G. H. DYER CO., Cambridge, Mass.

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OK'd by the A.A.A.

Official A. A. A. Test of *MyleMayker* proves big gasoline saving on Fords

Complete triumph in most exacting test

The test was made September 21st. A new Ford car that had been driven only a few miles was used. The speedometer used was tested at the Stewart-Warner factory preceding the test and pronounced perfect. The first step in the actual test was the adjusting of the carburetor. The expert at the Ford Assembly branch made the adjustment. You can almost see the expert grinning to himself, as he turned down the needle valve with the inward comment, "There now, beat that." And thanks to his skill, the new Ford car did hang up a record that was hard to beat. 22.5 miles to the gallon was the mark set for the Myle-Mayker to "shoot at."

Gasoline saving made by the *MyleMayker* of 18.22%

The car was then taken back to the starting point and the Myle-Mayker installed. To put it on, took just one minute and twenty-five seconds. Over identically the same route, and under the same conditions, 26.6 miles to the gallon was secured.

Tested and approved by

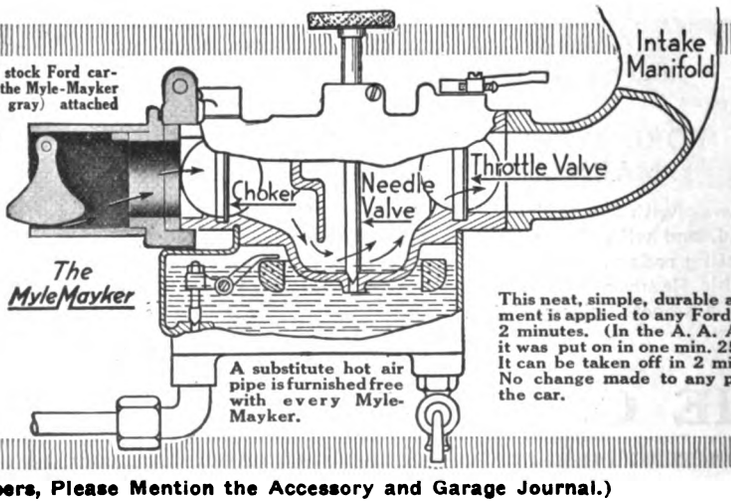
AMERICAN AUTOMOBILE ASSOCIATION A A A

You never heard of a new Ford driving 22.5 miles to the gallon, unless it was specially "tuned up", did you? You never heard of it **averaging** twenty. Eighteen is **above** the average. Yet the Myle-Mayker was able to beat the topmost mark of 22.5 miles, by four miles to the gallon—it made a clean-cut gain of 18.22% under these exacting conditions. In the A. A. A. test **acceleration** without the Myle-Mayker from 7½ to 30 miles required 24 seconds, with the Myle-Mayker, 22 seconds.

$5

Saves $1.50 to $5.00 every month on your Gasoline Bill

Sectional view of stock Ford carburetor, showing the Myle-Mayker (the portion in gray) attached



This neat, simple, durable attachment is applied to any Ford car in 2 minutes. (In the A. A. A. test it was put on in one min. 25 sec.) It can be taken off in 2 minutes. No change made to any part of the car.

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THE Myle Mayker

Copyright 1916, Myle-Mayker Company

for Ford cars

Although the mixture was far leaner than is used under ordinary conditions, **the first thing that was done after the Myle-Mayker was attached, was to turn down the needle valve three-eighths of a turn more.**

This test means to Ford owners that if they are getting 18 or more miles to the gallon with their Fords, that they can make a saving of 15% to 30% by using the Myle-Mayker. But if they are getting less than 18 miles to the gallon, they can make a much larger saving, probably of 30% to 50%.

A. A. A. approval means stampede to Myle Mayker

Get a *Myle Mayker* and test it out for yourself

Make an official test of your own, on a Ford car. Find out for yourself **how easy** it is to put on the Myle-Mayker—no laying up of car necessary for the car owner, no delay, no installation charge. Find out what a difference it makes in the running of the car—how much quieter and smoother it runs, what new "pep" it develops in responding to the throttle, also how much cooler it runs at all speeds.

Also find out what a big saving in gasoline is made. It won't be less than 15%—we absolutely guarantee that—and it is a sure bet that it will be between that and 50%. And remember while you're trying the Myle-Mayker—that it is sold to Ford owners on the basis of 30-days-to-try—money back unless satisfied. Just send the coupon for your trial Myle-Mayker— no money required—we'll send it at once and charge it to your account.

Tested and approved by

AMERICAN AUTOMOBILE ASSOCIATION AAA

Myle Mayker Company

Dept. 10-J **323 East 33rd Street, Chicago, Ill.**

My company guarantees the Myle-Mayker to add **15% to 50%** to the gasoline mileage of any Ford. Guarantees that any Ford with the Myle-Mayker will throttle down to **less than 4 miles** per hour **on "high"**—practically be **free from carbon** deposits—**will run smoother, more silent, more flexibly**—will have **cooler engine** and be **easier to start**—will **pull better** on high gear.

Eugene F. Kline
President

THE MYLE-MAYKER CO.
Dept. 10-J. 323 E. 33rd St., Chicago, Ill.

Send one of your Myle-Maykers, prepaid, with understanding that you guarantee it, when attached to stock Ford carburetor as per instructions, to save gasoline, make the engine easier to start, smoother running, freer from carbon. If not satisfied, I can return at the end of ten days at your expense, otherwise I agree to pay for it at regular price, less your usual trade discount. I am a dealer, and am ordering this Myle-Mayker to test it out with the idea of ordering a trial dozen or more, if it proves satisfactory. Send prices and full information.

Name of Dealer.....

Address in full.....

.....

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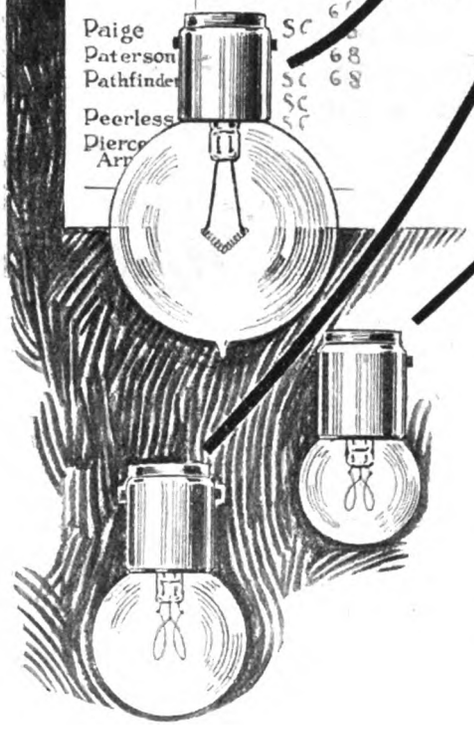
1916 MODELS—Continued

Car	Model	Contact	HEAD			SIDE			REAR			INSTRUMENT			OTHER LAMPS		
			V.	C-P.	Bulb	V.	C-P.	Bulb	V.	C-P.	Bulb	V.	C-P.	Bulb	V.	C-P.	Bulb
Oakland	32 & 38	S.C.	6-8	12G-12					6-8	2G-6		6-8	2G-6				
Oldsmobile	43-44 83-T&R	S.C.	6-8	15G-16½					6-8	2G-6		6-8	2G-6				
Overland	84T&R 86	S.C.	6-8	15G-16½					3-4	2G-6		3-4	2G-6				
Overland	84-C	S.C.	6-8	15G-16½		6-8	4G-8		3-4	2G-6		3-4	2G-6		6-8	4G-8	
Packard	Twin Six																
	A-125		6-8														
	A-135	D.C.	6-8														
Paige		S.C.															
Paterson																	
Pathfinder		S.C.	6-8														
Peerless		S.C.															
Pierce Arr																	



The Right Lamp in the Right Place

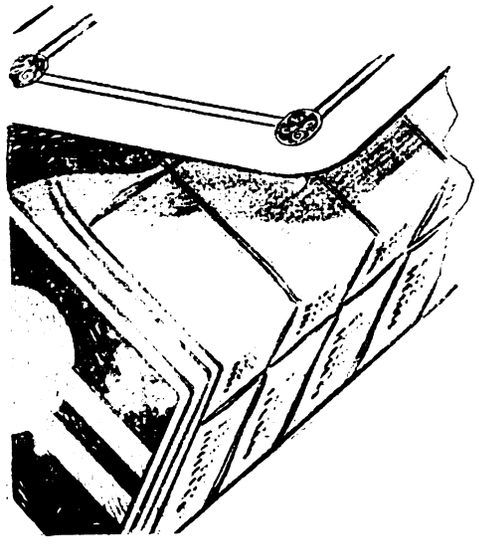
You simply can't make a mistake. All you need to know is the name and model of the car. Our little booklet tells exactly the lamps to use for all 1916, 1915 and 1914 models. Then you select the right lamp or lamps from our Automobile Lamp Assortment. Moreover, that little assortment stock is complete enough to supply the right lamps for practically every electrically lighted car.

EDISON MAZDA

Automobile Lamp Assortment

If you, Mr. Dealer, are making the mistake of letting someone else in your territory market these fast selling automobile lamps, begin now to get your share of the business. Write for our attractive agency proposition. The cost of a tire or two puts this complete Lamp Assortment on your counter. Renewing stock is so simple as to be almost automatic.

Our assortment stock plan makes Automobile lamps one of the fastest selling accessories



Another aid to bigger sales is the Auto Lamp Chest, carrying a set of six spare lamps for any car. This chest you pack from the assortment stock—and your customer, the car owner, is insured againt all delays and troubles due to burnouts. Besides *you* sell six lamps at a time.

Write today for full particulars.

EDISON LAMP WORKS

OF GENERAL ELECTRIC COMPANY

Harrison, N. J.

6021

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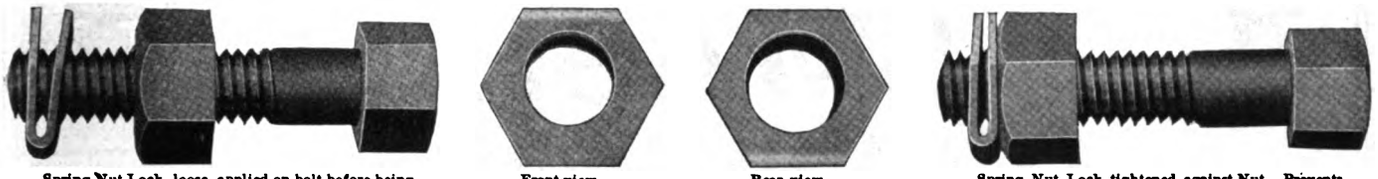

Spring Nut Lock, loose, applied on bolt before being set in place to hold until taken off

Front view

Rear view

Spring Nut Lock tightened against Nut. Prevents shaking off—follows nut tightening against material

Will Firmly Lock All Nuts in Place on the Cars or Parts You Manufacture

SPRING NUT LOCKS

save the *countless* losses that are constantly occurring wherever machines are run and part is fastened to part by nuts and bolts

Better Be Safe Than Sorry

Whether you manufacture, sell or use an automobile or machine of any kind *see to it* that every nut is ***safely,*** **SECURELY, PERMANENTLY** locked in place on its bolt with a *Spring Nut Lock*

Increase the *reliability,* DURABILITY, STABILITY of your motor, tractor, battery or what not by slipping on over **every** nut that engages a thread this simple, light, cheap and positively **efficient** device that holds any nut permanently in place and yet may be released at will—when lock, nut and bolt are as good as ever and can be used over again as often as desired.

You cannot afford to be without **Spring Nut Locks.** You cannot afford the loss of prestige, the mental worry, the risk of serious losses in life, limb and pocket-book that are liable to occur at **any moment** where vibration can start nuts loosening that are not properly locked in place, but are yet expected to hold vital parts. **The Spring Nut Lock is your safety insurance.**

In anticipation of the great volume of advance orders that have already begun to pour in on us as the merits of this great little device are becoming known to the mechanical world, we have let contracts for the manufacture of **Spring Nut Locks** to The Stowell Company of South Milwaukee, Wis., who have one of the largest plants in the country adapted to turning out this safety necessity in the enormous quantities it will be needed.

The Lock slips on the bolt like a washer and as easily—**economy of time in application.**

Its cost to the user is a mere trifle more than a washer—**the initial economy.**

It will not cut the thread of the bolt—**enduring economy.**

Its cost will be little more than that of the simple washer, cheapest of all devices.

Price lists will be issued soon. Write us for your probable needs NOW. Get in line to get your **share of this first output.** Send us your name and business and get our **first price lists** when issued.

Spring Nut Locks for Standard Threads for the following sizes are scheduled for delivery on or before November 1st ⅜ in., ½ in., ⅝ in., ¾ in., ⅞ in. and 1 in. By December 1st we will try to supply all standard and special sizes and by January 1st we are in hopes to be able to fill all orders promptly, however large. In the meantime look out for your own needs by getting in touch with us immediately. Allotments will be made from first output in proportion to the size of the advance order filled with us. Orders filled in rotation as received.

Spring Nut Locks for S. A. E. Standard Thread for automobile use have been thoroughly tested out and have aroused the enthusiasm of automobile men wherever tried. Locks for S. A. E. Standard Threads for 5/16 in., ⅜ in., 7/16 in., ½ in. and 9/16 in. are also in preparation and will be ready about November 15. Get in your orders at once.

Jobbers, Dealers, Garage Men—all Dealers—should take steps to supply the early demand of their customers for Spring Nut Locks. **Manufacturers** who take pride in their product should be prepared to adopt them. Railroads where economy and safety are first must have them. Write us your needs today and let us help you.

SPRING NUT LOCK COMPANY

651 Transportation Bldg. :: :: :: :: :: :: Chicago, Illinois

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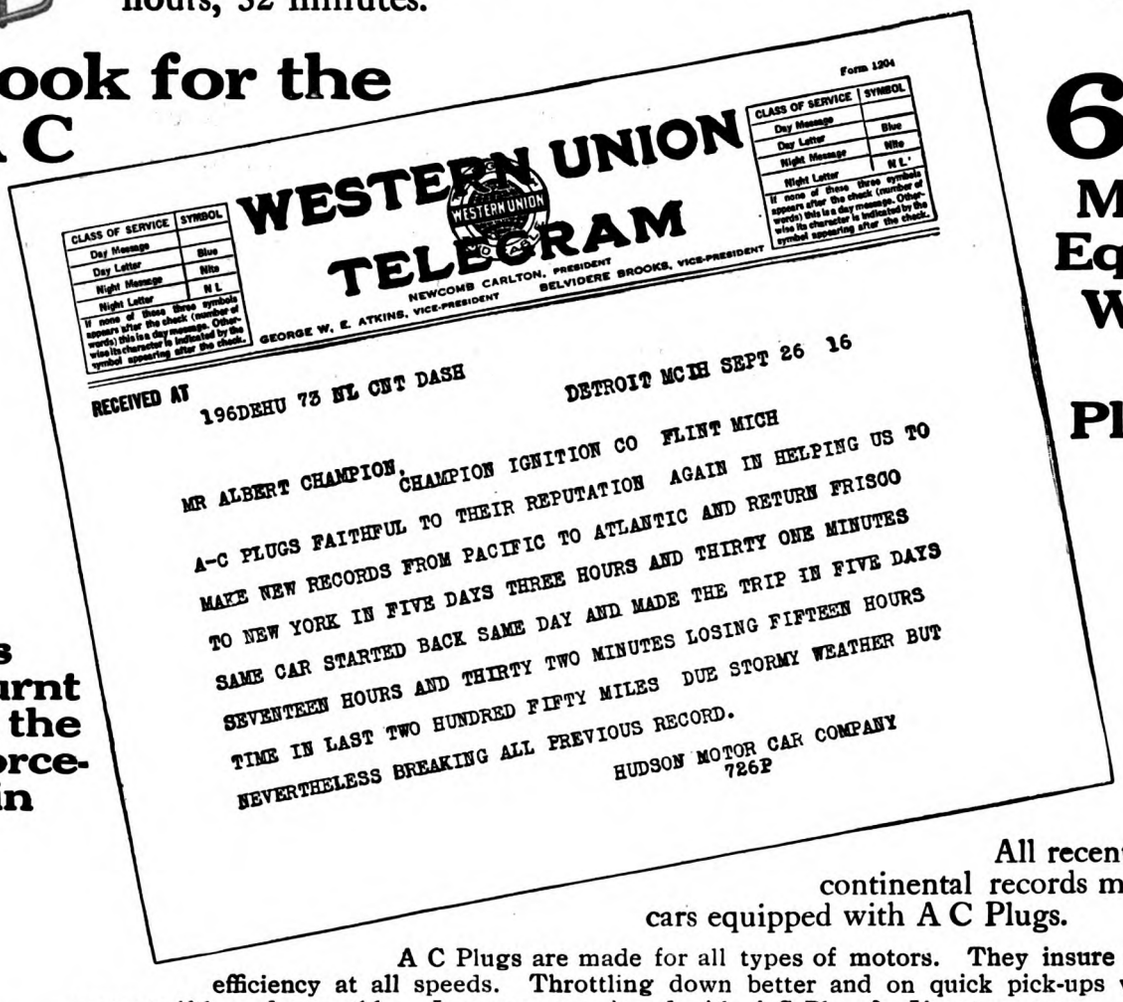
SMASH!
Go the Records

THE new transcontinental round trip record by a Hudson Super-Six, equipped with A C Plugs. San Francisco to New York in 5 days, 3 hours, 31 minutes. New York to San Francisco in 5 days, 17 hours, 32 minutes.

Look for the A C



Form 1204

CLASS OF SERVICE	SYMBOL
Day Message	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a day message. Otherwise its character is indicated by the symbol appearing after the check.

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT
GEORGE W. E. ATKINS, VICE-PRESIDENT
BELVIDERE BROOKS, VICE-PRESIDENT

RECEIVED AT

196DEHU 73 NL CNT DASH DETROIT MC IH SEPT 26 16

MR ALBERT CHAMPION, CHAMPION IGNITION CO FLINT MICH

A-C PLUGS FAITHFUL TO THEIR REPUTATION AGAIN IN HELPING US TO MAKE NEW RECORDS FROM PACIFIC TO ATLANTIC AND RETURN FRISCO TO NEW YORK IN FIVE DAYS THREE HOURS AND THIRTY ONE MINUTES SAME CAR STARTED BACK SAME DAY AND MADE THE TRIP IN FIVE DAYS SEVENTEEN HOURS AND THIRTY TWO MINUTES LOSING FIFTEEN HOURS TIME IN LAST TWO HUNDRED FIFTY MILES DUE STORMY WEATHER BUT NEVERTHELESS BREAKING ALL PREVIOUS RECORD.

HUDSON MOTOR CAR COMPANY
726P

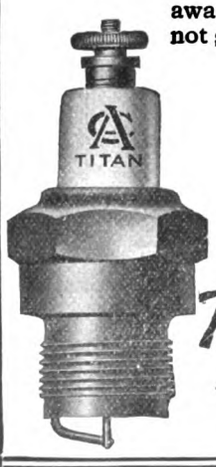
61 Mfrs. Equip With AC Plugs

It's Burnt In the Porcelain

All recent transcontinental records made by cars equipped with A C Plugs.

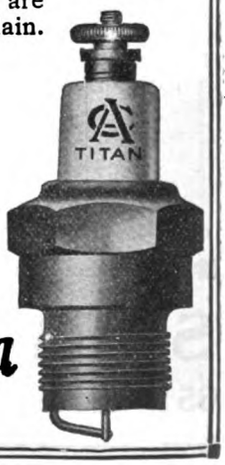
A C Plugs are made for all types of motors. They insure highest efficiency at all speeds. Throttling down better and on quick pick-ups will get away swiftly and smoothly. Is *your car* equipped with A C Plugs? If not, you are not giving it a fair chance. Accept no spark plug unless A C is burnt into the porcelain.

Champion Ignition Company, Flint, Michigan
Sole Manufacturers of



AC

The Standard Spark Plug of America



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The Taft-Peirce Manufacturing Company

ANNOUNCES

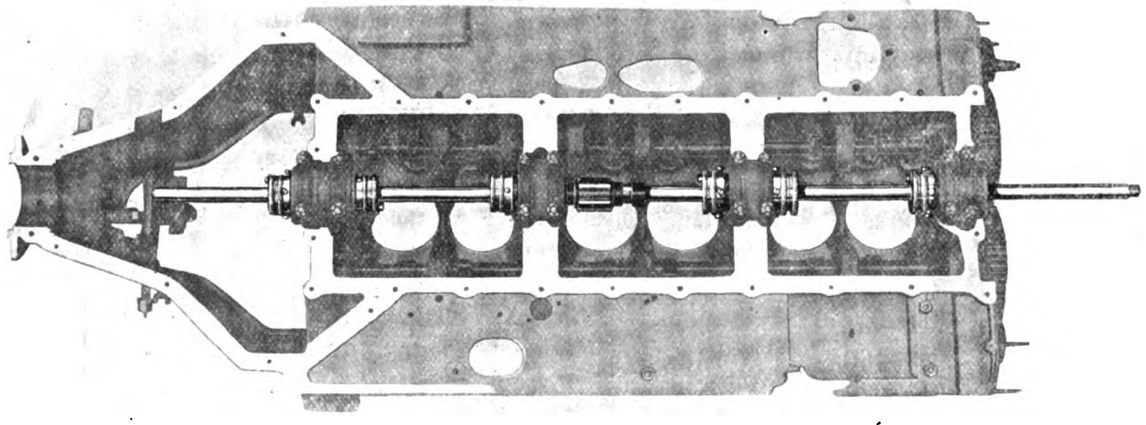
that it has acquired
the patent rights to manufacture and sell the full line of

MARTELL ADJUSTABLE REAMERS

THE ALIGNING REAMER - - - FOR GARAGE AND REPAIR SHOP USE.
THE LINE REAMER - - - FOR MANUFACTURING USE.

They are used for line reaming a series of bearings where accuracy of alignment and bearing sizes are important.

THEY ELIMINATE ALL HAND SCRAPING



The Martell Aligning Reamer Assembled in a Packard Six crankcase and ready to ream bearing number three.

ALSO
FOR GENERAL USE

The Hand Reamer and the Machine Reamer

The Taft-Peirce Manufacturing Company

WOONSOCKET, RHODE ISLAND, U. S. A.

NEW YORK—Woolworth Building **DETROIT—Majestic Building**

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Liners—Shims

Perfection Snap Cable Terminal

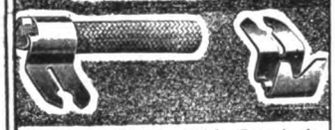
Standard Battery Con.

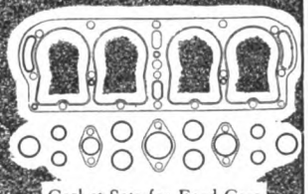
Clero Electric Push Buttons

Standard French Type Gaskets

Ford Lighting Outfits

Spark Plug Gaskets Carried in Stock


Copper and Brass Cable Terminals


Gasket Sets for Ford Cars

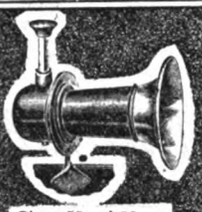
Flange Exhaust Gaskets

Slip Snap Terminals

Copper-Asbestos Gaskets

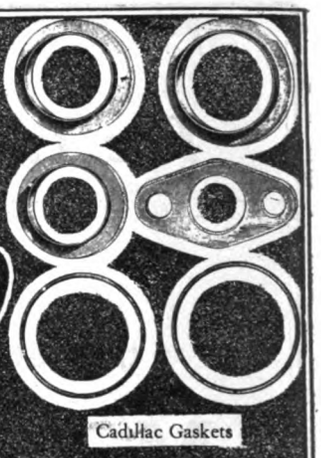
Slip Snap Terminals

Two Point Hard Rubber Switches


Clero Hand Horn

Clero Electric Push Buttons

FITZGERALD MFG. CO.


Cadillac Gaskets

Standard "Lug" Type Terminals

Perfection Spring Battery Con.

Shim Stock

Steering Post Attachments

Ford Ignition Assembly

Standard Closed Type Gasket

Standard Flange Fittings

Overland Gaskets

We Are the Largest Producers

Of standard metal specialties in the industry. We can supply any demand for such products, or special stampings, at prices lower than can be quoted elsewhere, absolutely guarantee quality and make delivery on time. Our resources—plant, equipment, capital and specializing workmen insure such marked manufacturing advantage that no other concern in the industry can compete with us. We protect our customers and the large discounts given mean substantially larger profits. If your stock is low, or you will require stock during the next few months, the time to purchase is today.

Jobbers and Dealers

The great problem with the majority of Jobbers and Dealers, garages, repair and machine shops, is obtaining supplies of material. If quality, price and time of delivery are factors that influence purchasing. Write to us today.

CLERO HORNS—ALL TYPES

Thousands of dealers are specializing CLERO hand-operated horns, made in types and sizes to meet every requirement. These horns are distinct in appearance, have pleasing tones, are guaranteed to be the greatest value ever offered, and they can be quickly fitted. Low sales prices, large discounts and universally established demand commend these equipment to every dealer. If you want the horn business of your territory, sell CLERO HORNS.

Address all correspondence to main office.

FITZGERALD MFG. CO.

TORRINGTON, CONN.

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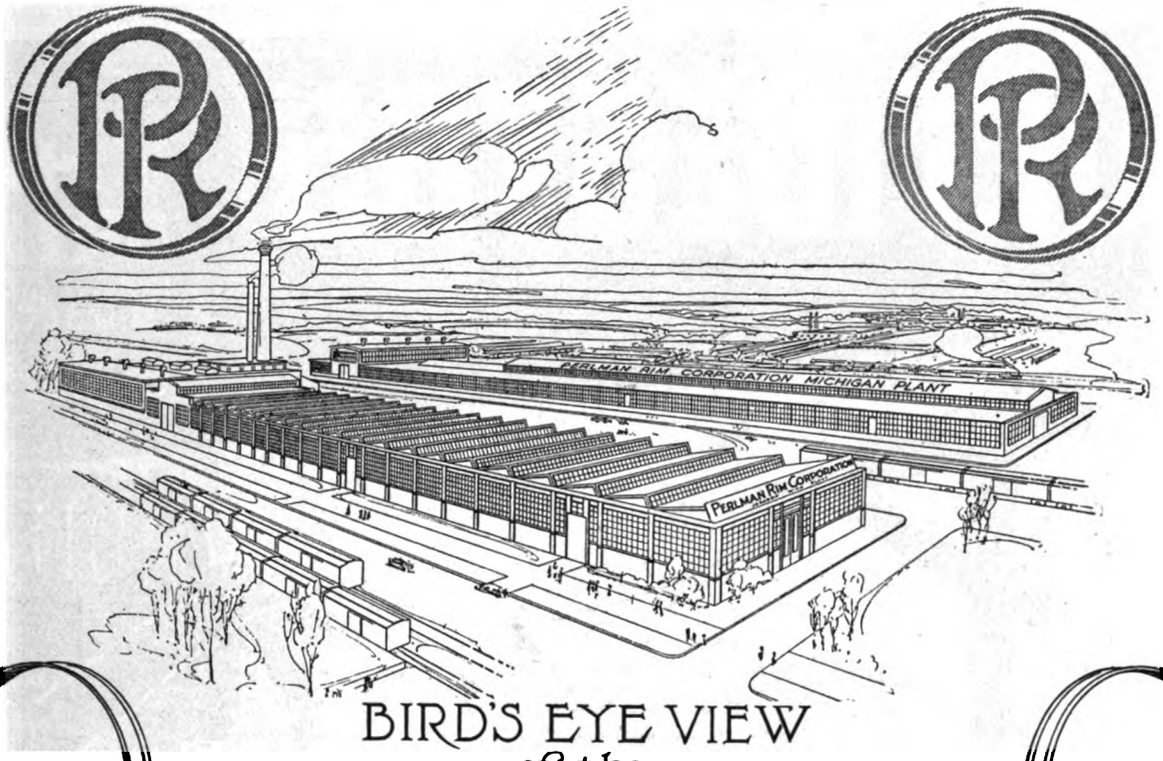

BIRD'S EYE VIEW
of the
PERLMAN RIM CORPORATION
JACKSON, MICHIGAN, PLANT

The largest and only exclusive demountable rim plant in the world, covering five acres.
The mechanical equipment is new and up to date, ensuring volume and quality production.
Producing five thousand sets of demountable rims every working day.
Enough to equip over one million, five hundred thousand (1,500,000) motor cars annually.
Prompt shipments of demountable rims in any desired size and quantity.

Perlman Patent Protection Policy Protects Purchasers.

Perlman, the Original Demountable Rims are—

FIRST in Quality, Quantity, Service, Saving, Economy, Efficiency, Use and Value—

We solicit your demountable rim business, inviting correspondence.

PERLMAN RIM CORPORATION

(Controlling Perlman Demountable Rim Patents)

MANUFACTURERS OF

Demountable Rims

Plain Clincher and all styles of Q. D. Demountable, Straight Side or Clincher

ALL CORRESPONDENCE SHOULD BE SENT TO THE

Executive Offices and Sales Department

No. 1790 BROADWAY
United States Rubber Co. Building
Broadway and 58th Street
New York, N. Y.

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VOL VI. PAWTUCKET, R. I., OCTOBER 1916. No. 6

General Motors Announces Plans to Stockholders.

Proposal to Increase Capital to Total of $102,600,000—Effective Nov. 1.

The financing plan for the General Motors Corporation, as announced in the September issue of this magazine, has been changed slightly, in that instead of $100,000,000 the capital will be $102,600,000.

The plan as presented to stockholders in a circular sent out recently is as follows:

"The General Motors Corporation has been organized under the laws of Delaware with an authorized capital stock of $102,600,000, of which $82,600,000 is common stock and $20,000,000 is non-voting preferred stock. The shares are of the par value of $100 each. The preferred stock is entitled to receive cumulative dividends at the rate of six per cent. per annum, and is subject to redemption, at the option of the company, at $110 a share on Nov. 1, 1918, or any subsequent dividend-paying date. In the event of dissolution, the holders of preferred stock are entitled either to be paid the par value thereof and accrued dividends thereon, or, at the discretion of the directors, to receive, in lieu thereof, a distribution in kind of preferred stock of General Motors Company of New Jersey, on the basis of one share thereof for each one and one-third shares of preferred stock of the Delaware corporation, before any assets are divided among or paid to the holders of common stock. The plan is to become effective as of Nov. 1, 1916, and all exchanges of stock under this offer will be made as of that date. Stockholders of the New Jersey company of record at the close of business Oct. 14, 1916, will thus receive the dividend payable thereon by that company on Nov. 1, 1916. Dividends upon the preferred stock and common stock of the Delaware corporation will be computed from Nov. 1, 1916, upon all of its stock issued and exchanged within the period hereinafter fixed for effecting such exchange."

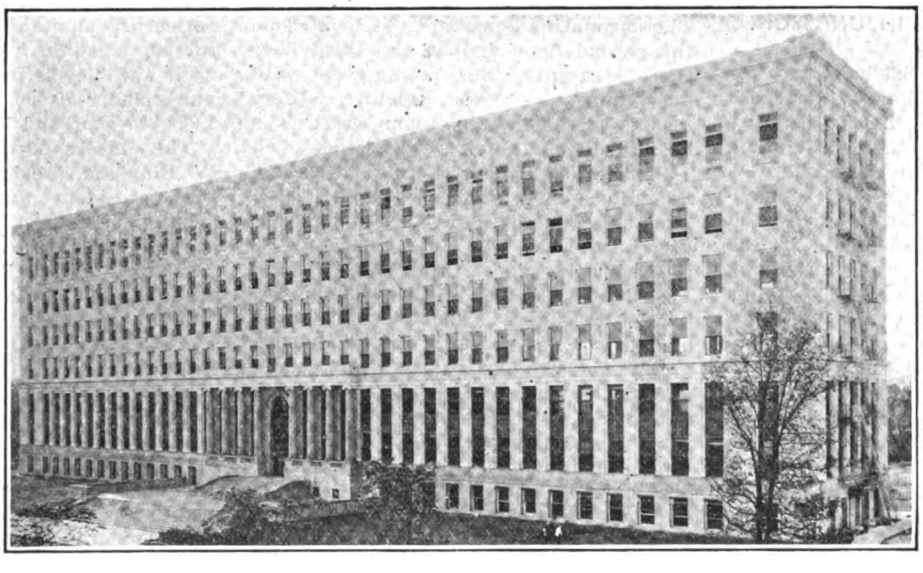
WILLYS-OVERLAND OPENS NEW OFFICE BUILDING.

The new administration building of the Willys-Overland Company, one of the finest structures of its kind in the world, has been opened in Toledo, O.

The building is 63 by 375 feet, seven stories high, with more than 160,000 square feet of floor space. It is constructed of sand stone and brick, terra cotta and granite ornamental coping and trimmings. The shape of the structure affords excellent lighting facilities and the 588 odd windows fairly flood the big building with sunshine on clear days.

The main entrance is as impressive as the rest of the structure, large swinging bronze doors opening onto a lobby which is marked off by huge oaken columns.

(Continued on Page 12.)



New Administration Building of the Willys-Overland Company, the Finest of Its Kind in the World.

United Motors Takes Over Brown-Lipe-Chapin Co.

Another Unit Added to the Subsidiaries, Adding Maker of Differentials to Combine.

The United Motors Corporation has purchased the Brown-Lipe-Chapin Company of Syracuse, N. Y., manufacturers of differential gears. It is understood that the policy of the company will be continued as at present and that H. W. Chapin will continue as general manager of the plant, but the new interests in the company will immediately make plans for erecting additional buildings to enable the company to increase its production 100 per cent.

President Alfred P. Sloane of the United Motors will become a member of the directorate and the company's affairs will be conducted in the same way as that followed out in operating the six other subsidiaries of the United Motors, the Hyatt Roller Bearing Company, the Perlman Rim Corporation, the Remy Electric Company, the Dayton Engineering Laboratories, the New Departure Manufacturing Company and the Lovell-McConnell Manufacturing Company.

The new subsidiary now employs about 2000 men, but increased facilities planned will bring the number to 3000.

The Brown-Lipe-Chapin Company was largely owned by Messrs. Brown and Lipe and C. W. Mott and associates of his who are identified with the General Motors Company. The Brown-Lipe-Gear Company of Syracuse is not involved in the transaction.

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Raybestos Planning to Expand.

New $1,500,000 Company Incorporated to Take Over Royal Equipment Company.

A $1,500,000 company has been incorporated under the laws of the State of Connecticut to be known as the Raybestos Company, which will take over the Royal Equipment Company and all its interests in the manufacture of the well known Raybestos products, brake lining, brakes and other accessories.

The new company has acquired a 15-acre site at Bridgeport, where a plant consisting of six different buildings will be erected. The management of the business and its relations with dealers and jobbers will remain unchanged, as will also the business policy.

The new plant will consist of two buildings, 100x600 feet, for weaving lining, one building 60x200 feet for treating the lining, one building 60x300 feet for making compressed sheet, one building 60x200 feet for making brakes and a building 60x300 feet for a store house and shipping depot.

METZ HAS NEW SALES PLAN.

The Metz Company of Waltham, Mass., has put in force a sales plan which is similar to that inaugurated by the Ford Motor Company early in the fall.

Agencies have been substituted for its branches in a number of cities and it is understood that the company will have several agencies in Boston. The company signed a lease to take over a new building in Boston, where its general sales and service station will be located, and has disposed of its lease on the building at 195 Massachusetts avenue, in Cambridge, which has been used as the sales department for some time. At present the general sales department is conducting its business from the factory.

PREST-O-LITE GETS INJUNCTION.

The United States District Court for the District of South Dakota, southern division, has granted the Prest-O-Lite Company, Inc., a permanent injunction against the Power City Sun-Lite Gas Company of Sioux Falls, S. D., compelling the removal of the marks which identify the tanks as elements in the Prest-O-Lite exchange system, forbidding the defendant to call its Sun-Lite tanks "Prest-O-Lite" and from using the word "Prest-O-Lite" in any way to promote the sale or exchange of Sun-Lite tanks, or from other direct or indirect infringement upon the rights of the Prest-O-Lite company.

HENRY SPLITDORF DEAD.

Henry Splitdorf, whose name is known throughout the civilized world wherever the automobile is in use, as a pioneer manufacturer of magnetos and ignition systems, died at his home in New York City on Tuesday, Oct. 17.

He started making magnetos in 1858. These machines at that time were known as the Werner von Siemens magnetos and were used for experimental purposes in college laboratories. He later invented and manufactured the Splitdorf coil for firing mines and explosives and also the Splitdorf repeating relay for use in connection with telegraph instruments. The Rhumkroff coil for X-Ray machines is also one of the Splitdorf products. When the automobile industry began to develop Mr. Splitdorf became one of the leading manufacturers in the world of both ignition apparatus and spark plugs.

He is survived by two sons, Charles F., who is vice president of the Splitdorf Electrical Company of Newark, N. J., and John Splitdorf.

Packard Company Shows Big Surplus

Total Assets of the Company Were Announced as of Aug 31 to Reach $33,644,658.79.

During the past year the Packard Motor Car Company of Detroit has increased its surplus by over $6,000,000 and on Aug. 31 of this year had a surplus of $5,381,486.04 after dividends had been paid.

The statement read at the annual meeting of the company on Oct. 19 showed that a total of $2,847,648.76 had been written off for depreciation during the year and that the total assets of the company on Aug. 31 were $33,644,658.79.

An increase in the authorized capital stock of the company from $16,000,000 to $21,000,000 was made during the year by the issuance of $5,000,000 additional common stock. An issue of five per cent. gold debenture notes, amounting to $3,000,000, are due on Dec. 1 of this year.

OVERLAND'S NEW OFFICE.

(Continued from Page 11.)

The accounting department is located on the second floor and on the third floor there is a girls' rest room, fitted with everything to provide comfort. There also is an emergency room which is a hospital in miniature.

On the fourth floor there is a dealers' reception room, where the latest Overland and Willys-Knight models are displayed, and the fifth floor is devoted to the executive department, the office of President Willys and other officials being located there. The telephone headquarters of the entire factory and a telegraph office are located on the sixth floor and on the seventh floor there is a large auditorium with seating capacity for 600 people, and also a cafeteria and dining room for the office force, where meals are served at cost.

There is an automatic mail service to all floors and on each floor several messengers devote their entire time to distributing the mail matter among the offices.

New $25,000,000 Corp. Formed.

Perfection Spring and Standard Welding Companies Combined with $25,000,000 Capital.

The directorates of both the Perfection Spring Company and the Standard Welding Company of Cleveland, O., have approved a plan under which these two concerns will be merged if the ratification of the stockholders can be secured.

The consolidation plan calls for the conversion of the securities of both companies into a new company which will have an authorized capital stock of $25,000,000 common and $10,000,000 preferred, the latter class to be seven per cent. cumulative.

The two concerns at present have combined assets of $10,000,000. The Perfection Spring Company has an authorized capital of $2,500,000, of which $1,000,000 is preferred and $1,500,000 common. Only $1,250,000 of the common is outstanding.

Automobile springs are the principal product of the Perfection company, which supplies over 30 automobile manufacturers. Starting business 10 years ago, Christian Girl and M. M. McIntyre, with a capital of $100 built the business up to $209,310 in five years. Five years later, during the year 1915, ending June 30, the annual business totaled $1,645,829. During the last fiscal year it totaled $3,200,000 and net earnings for the first three-quarters of the year reached $282,811.

The officers of the company are: Christian Girl, president and general manager; E. W. Farr, vice president; P. A. Connelly, secretary; T. E. Borton, treasurer. The board of directors is composed of the officials named, together with F. F. Prentiss, C. C. Bolton and W. R. Clymer.

The Standard Welding Company has an authorized capital of $2,225,000, of which $2,206,800 has been issued. A varied line of automobile parts and accessories are manufactured, including steel tubing, rims for vehicle wheels, motorcycle and bicycle parts. The annual output includes 50,000,000 feet of tubing and 1,000,000 rims and bands.

The officers of the company are: C. W. Bingham, president; H. P. McIntosh, vice president and treasurer; J. H. Champ, secretary. These officers and the following men constitute the board of directors: H. P. Bingham, H. P. McIntosh, Jr., C. C. Bolton and D. S. Blossom.

N. A. A. A. J. OF N. E.

The ways and means committee of the National Association of Automobile Accessory Jobbers will hold a meeting in Boston on Nov. 20 and 21. On Nov. 22 a meeting will be held of the accessory jobbing trade interests of New England, with the object of securing a closer affiliation of the men in the business in this section with the national association.

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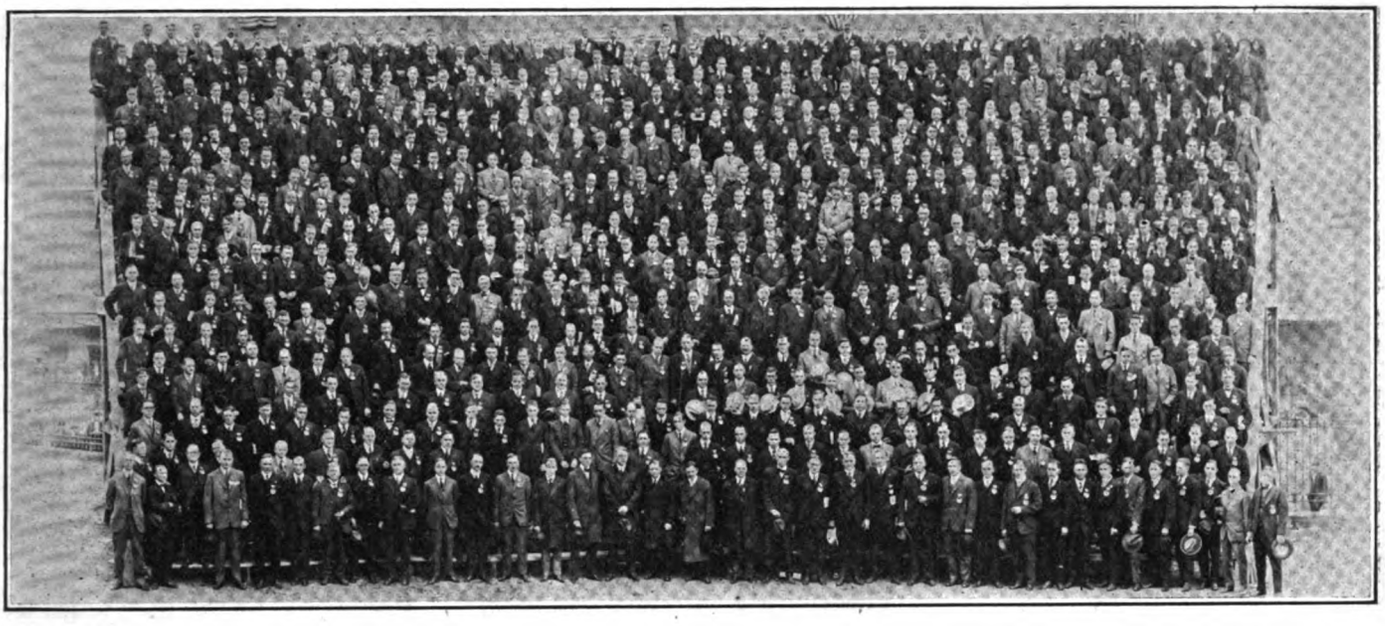

Over 500 Representatives of the Firestone Tire and Rubber Company from Various Parts of the World Meet at the Annual Sales Convention. It Was the Largest in the History of the Company, and Was Held in the New $300,000 Clubhouse.

Hardware Men and Accessories.

At Convention of National Hardware Association Plans Are Laid to Enter Accessory Field.

At the annual convention of the National Hardware Association, held recently at Atlantic City, N. J., an accessory branch was formed of the motor car accessory jobbers in the association. This division was formed for the promotion of the business among hardware merchants who are now jobbing accessories or who intend to enter the business. Edward Rose of Elmira, N. Y., was appointed chairman of the branch.

The officers of the N. H. A. elected for the following year were as follows: C. A. Knapp of Knapp & Spencer, Sioux City, Ia., president; Brace Hayden, first vice president; H. August Luedke, second vice president.

The American Hardware Manufacturers' Association, which is allied with the jobbers' organization, elected officers for the ensuing year as follows: Fayette R. Plumb, president; Samuel D. Latty, first vice president; A. H. Dillon, second vice president; Frank E. Gould, third vice president.

TRANSMISSION COMPANY TO MOVE.

The Cotta Transmission Company, Rockford, Ill., maker of the Cotta transmission system, has bought a plat of land containing 100,000 square feet in Rockford on which a new factory of the monitor type is now being erected. The business of the Cotta company has increased to a large extent during the past year, and the company is forced to expand its plant facilities. The new building, which will be one story high, is expected to be ready for occupancy about Nov. 20.

At present the Cotta company employs approximately 100 hands. When the new plant is in operation from 175 to 200 men will be needed. Officers of the company are T. D. Reber, president; A. D. Scoville, secretary and treasurer; E. P. Reber, general manager.

BUYS CHICAGO ELECTRIC.

The Walker Vehicle Company of Chicago, manufacturer of the Chicago Electric car, has sold the completed models on hand and its interests in the car's manufacture to the Anderson Electric Car Company of Detroit.

The Anderson company has also engaged the services of Gail Reed, general sales manager of the Walker company, and other employees to conduct the sales department for the Chicago Electrics.

SMITH COMPANY TO HAVE CAPITAL OF $14,200,000.

President L. R. Smith of the A. O. Smith Company, Milwaukee, one of the country's largest manufacturers of heavy parts and frames for automobiles and drop forgings, announced on Oct. 31 the consummation of plans whereby the Smith company's present capitalization of $1,200,000 will be increased to approximately $14,200,000 to provide for the expansion made necessary by the concern's huge business.

The plan embodies the issue of $3,000,000 preferred seven per cent. stock and 100,000 shares of common with no par value, but estimated at $100 a share, making the total capitalization with the present stock $14,200,000. The following are to be added to the directorate: Mr. Lockhart of White, Weld & Co., New York City; I. C. Elston of Elston & Co., Chicago; Major C. C. Jamieson of Jamieson & Houston, New York. These men, together with C. K. Fankhauser of New York, a prominent financier, helped President Smith to put through the deal.

National Motor Corp. Formed.

National Motor Vehicle Company of Indianapolis Taken Over by New Organization.

The National Motor Car and Vehicle Corporation of New York, a newly organized concern, with 80,000 shares of stock of no par value, has taken over the National Motor Vehicle Company of Indiana, manufacturers of National cars.

While the present management will continue in control of the operations of the company, there is practically a new directorate, which includes O. J. Thompson of Redmond & Co., Stoughton A. Fletcher, president of the Fletcher-American National Bank of Indianapolis; Buell Hollister and Leonard Snider.

BOWER BEARING DIVIDEND.

The Bower Roller Bearing Company has declared a quarterly dividend of 15 per cent., making the third dividend of this amount for the year and a total of 45 per cent. that has been disbursed to stockholders. The directors have also recommended that the stockholders approve the declaration of a 100 per cent. stock dividend at the annual meeting in January.

NEW ERA BUYS ACCESSORIES.

The W. W. Sly Manufacturing Company of Cleveland, O., has sold the patents, good will, equipment and stock used in the manufacture of the tire carrier and tire lock to the New Era Spring and Specialty Company of Detroit, which for five years has been the selling department for those specialties. The New Era Spring and Specialty Company will manufacture these products, together with its shock absorber and bumper.

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WATER
WELDING

Who Can Afford to Experiment?

Big, quick and sure money can be made in the welding business in any town, and there are no limitations to the quantity and variety of work to be done.

With a WATERHOUSE WELDING OUTFIT you immediately become established in your town as the dependable welder. The first cost covers the entire investment, and you can make more money in less time with less effort and with less operating expense than in any other business.

Identify yourself with the leaders by using the same equipment they use. The big money makers have the Waterhouse. If you start right, you avoid the cost of expensive experiments with inferior outfits, and this saving is more than enough to pay for a complete WATERHOUSE WELDING OUTFIT.

The Waterhouse is produced by specialists, and it is the pioneer welding outfit made in America. It is 100% efficient in all work, welding or cutting, and is the

WATERHOUSE WELDIN

3 PELHAM STREET

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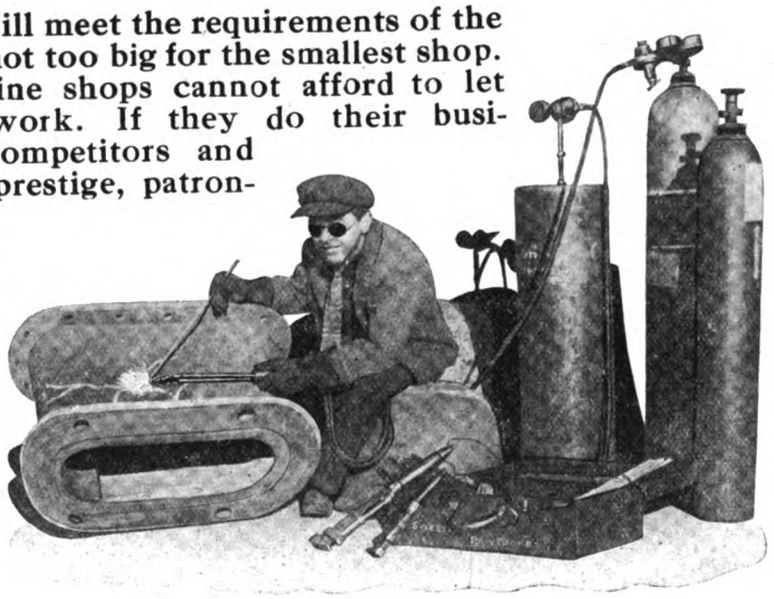
HOUSE OUTFIT

Build a Business for Yourself!

easiest, safest and most economical equipment to operate. It makes profits where others make losses.

Learn how much welding work there is to be done in your town; the business opportunity will surprise and interest you. Beat the other chap to it by starting in this business today. With a Waterhouse you can secure and hold the trade, and the satisfaction you can give your customers will bring more business and constantly increasing returns.

A Waterhouse outfit will meet the requirements of the largest plant, and yet it is not too big for the smallest shop. Garage, repair and machine shops cannot afford to let others do their welding work. If they do their business will be swung to competitors and that would mean loss in prestige, patronage and profits.



Send for our free instruction book on welding. It supplies all the practical information a beginner needs. A postal card brings it—every repairer should have a copy.

COMPANY

BOSTON, MASS.

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Trailer Makers Form Association.

Representative Manufacturers Organize to Obtain Advantageous Publicity and Legislation.

The Trailer Manufacturers' Association of America was formed at a recent meeting of manufacturers in that line held in Detroit. The object of the association will be to obtain proper legislation and publicity. The officers of the new organization are: C. A. Geiger, Troy Wagon Works, Troy, N. Y., president; Miss K. Gleason, Rochester Trailer Company, East Rochester, N. Y.; vice president; J. C. Endebrook, Sechler Company, Cincinnati, O., secretary-treasurer.

C. W. Shipley of the Sechler Company acted as temporary chairman and A. W. Keesler of the Watson Wagon Company as temporary president.

KING TO RAISE PRICE.

The King Motor Car Company has sent a letter to dealers informing them of an advance in the price of the model E King, to become effective within the next few weeks.

BRAKE LINING PRICES.

There seems to be a considerable difference of opinion in the brake lining manufacturing trade as to the proper level of prices. It is understood that a majority of the members of the Association of Brake Lining Manufacturers are in favor of a new price list, with quotations nearly double what they were, but several large manufacturing interests not in the organization, notably Thermoid, Johns-Manville and Royal Equipment, are not disposed to change the list prices and have readjusted their discounts to dealers and jobbers.

Owing to the strikes in Canadian asbestos mines and the high prices obtaining for all materials, it is contended by the advocates of a higher list that such action is justified and a further contention made by those favoring this side of the question is that some manufacturers are selling at a loss.

PROVIDENCE SHOW IN NOVEMBER.

The Providence Automobile Show, which is held in the State Armory in that city annually under the auspices of the Rhode Island Licensed Automobile Dealers' Association, will be held during November from the 10th to 18th inclusive. The plan of opening on a Friday evening, giving two full Saturdays for out of town visitors and business men, proved so successful last year that it has been adopted permanently.

Percival S. Clark, who has managed the exhibitions for several years and made them highly successful, is again in charge.

DISCHER PATENT UPHELD.

The U. S. District Court of the eastern district of Wisconsin has handed down a decision upholding the Discher patent covering bumper construction and granted a permanent injunction to Grant F. Discher of the Gemco Manufacturing Company, which controls the patent, against the Auto Parts Manufacturing Company. The defendant has appealed to the U. S. Circuit Court of Appeals for a temporary suspension of the injunction and the court agreed to grant the suspension providing the Auto Parts Manufacturing Company filed a bond of $15,000 to cover any damages that might accrue while the appeal is pending.

Men Who Attended the Three-Day Briscoe Convention.

Budd Expanding Wheel Business.

Large Plant with Six Acres of Floor Space Being Erected in Philadelphia, Penn.

The Budd Wheel Corporation, with a capital of $2,000,000, is erecting a large plant with six acres of floor space in Philadelphia for the manufacture of automobile wheels of steel and wire. The product is covered by patents and it is claimed that it has many advantages over the present type of all-steel wheel. The plant will have an equipment valued at over $500,000, with a capacity of 1000 wheels a day.

The capital of the new concern is made up of $1,000,000 seven per cent. preferred stock and $1,000,000 common.

"JINRIKISHA CARS."

The American Motor Vehicle Company of Lafayette, Ind., will manufacture a small car to be known as the American Junior. This machine will have a 40-inch tread and 70 inch wheelbase and will be sold to the juvenile trade. It is also proposed to market it in China and Japan as a substitute for the jinrikisha in general use in the Orient.

Jacob Weisenthal of Lafayette is president of the company. Louis Marx of Chicago is vice president and W. M. Crockett of Lafayette is secretary. B. J. Mills, a Chicago business man, is one of the principal stockholders. The capital of the new company is $25,000.

BRISCOE SALES CONVENTION.

Sales representatives and district managers of the Briscoe Motor Corporation met at the company's office in Jackson, Mich., Oct. 23-27, for one of the most successful meetings in the concern's history. The men shown in the accompanying illustration were in attendance. Reading from left to right they are: General Manager Frank Briscoe, Director Horace De Lisser, President Benjamin Briscoe, Wright Gillies, New York traveling representative; Charles Salak, Illinois manager; E. W. Doty, Michigan manager; John Moore, traffic manager, New York. Second row: John R. Findlater, sales supervisor and sales manager in the absence of E. L. Wilson; John H. Ham, southeastern district manager; F. E. Bixby, district manager, South Dakota and Colorado; Jack Graff, sales department; Rue De Lisser, New York manager; Charles Pickford, sales department; W. R. De Voe, assistant sales manager; Carl Fisher, supervisor, Kansas. Third row: Robert T. Walsh, advertising manager; Ed. Kauffman, sales department; O. F. Stone, sales department; John Stanley, assistant sales manager; J. C. Anderson, district manager, Minnesota and North Dakota; A. W. Martz, district manager, Indiana and Kentucky; L. E. Latta, secretary; A. W. Scoville, New York traveling representative.

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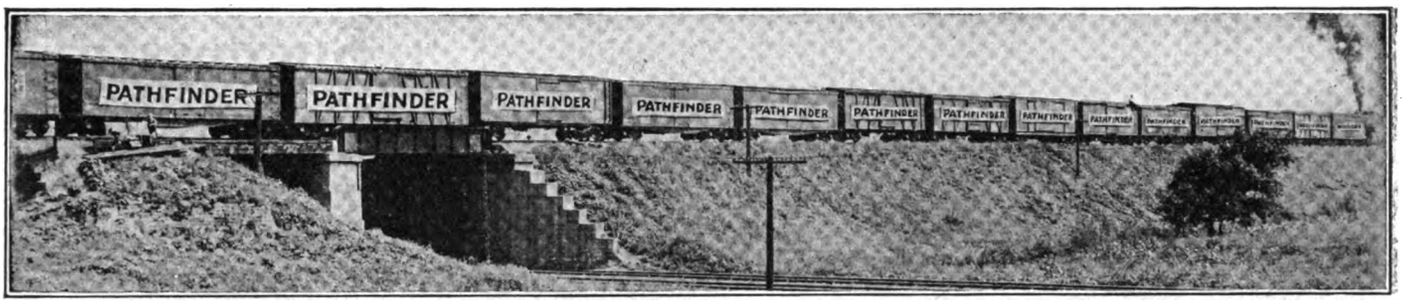

The Pathfinder Company Is Doing a Large Foreign Business, as Is Evidenced by This Train Load Shipment Destined for Russia.

100 Makers To Exhibit.

N. A. C. C. Has Awarded Show Space at New York and Chicago to Leading Manufacturers.

At the meeting of the National Automobile Chamber of Commerce to draw for space for the annual automobile shows in New York and Chicago, over 100 automobile manufacturers were represented, including all the prominent concerns in the industry.

Practically every foot of space at both shows has been spoken for and it is assured that this season's exhibitions at the Grand Central Palace in New York, beginning Jan. 6 and at the Coliseum in Chicago, beginning Jan. 20, will be the largest and most successful ever held.

Space was allotted to the following well known cars: Willys-Overland, Buick, Studebaker, Dodge, Maxwell, Cadillac, Chevrolet, Chalmers, Austin, Kline, Reo, Oakland, Winton, Packard, Saxon, Hudson, Dort, Westcott, Briscoe, Anderson, Milburn, Woods, Ohio, Pierce-Arrow, Stearns, Chandler, Olds, Mitchell, Pathfinder, Hackett, Peerless, F.I.A.T., Auburn, Paige, Franklin, Moline, Cole, Velie, Premier, Lexington, Cunningham, National, Pullman, Glide, Briggs-Detroiter, McFarlan, Grant, Allen, King, KiselKar, Hupp, Case, Scripps-Booth, Marmon, Monroe, Lozier, Elkhart, Nash, Consolidated, Inter-State, Regal, Mercer, Baker, Haynes, Stutz, Apperson, Moon, Empire, Lewis, Mutual, Paterson, Jackson, Crow, Davis, Standard 8, Liberty, Enger, Sterling, Harroun, Princess, Chicago, Drexel, Jordan, Monitor, Metz, Ben Hur, Dey, Elgin, Roamer, Emerson, American, Dixie, Classic, Kent, Sun, Doble Steam, Stephens, H. A. L.

Both at the directors' meeting and at the members meeting there was considerable discussion of the freight situation, owing to the shortage of freight cars. It was reported that there are now 70.000 automobile cars in service, with 7900 more under construction. During the month of September car load shipments of automobiles totaled 21,660, as against 18,940 for the same month in 1915.

ARGO PLANT SOLD.

The Columbia Motors Company of Detroit, Mich., has purchased the Argo Electric Vehicle Company of Saginaw, Mich., and will soon begin the manufacture of a new car.

The Columbia Motors Company has a capital of $500,000. The officers are J. G. Bayerline, president and general manager; A. T. O'Connor, secretary and treasurer; T. A. Bollinger, vice president; Walter L. Dailey, sales manager; Ray Long, chief engineer; W. E. Metzger, vice president; John Mohrhardt, superintendent. These officials constitute the board of directors.

A production of 3500 cars for the coming year is scheduled by the company. The cars will sell in the neighborhood of $1000 each.

INCREASE CAPITAL.

The Marathon Tire and Rubber Company of Cuyahoga Falls, O., will increase its capital stock from $500,000 to $1,000,000, to provide increased manufacturing facilities. The sales of the company's products are now running 70 per cent. ahead of those at this time last year.

Expanding At New Departure.

Bearings Manufacturer Has Plans to Double Production Facilities at Bristol Plant.

The New Departure Manufacturing Company, Bristol, Conn., has underway a number of additions to its plant which when completed will double the capacity of production. At present the capacity is 21,000 bearings a day, which is 100 per cent. over what it was at this time last year, and 2700 men are employed. Present plans call for an increase in the working force to 4500 men by July 1, 1917, and a daily capacity of 30,000 to 35,000 bearings. Work is now progressing on a new four-story factory, 60x450 feet, and work will soon commence on another building, 100x600 feet, part of which will be one story in height and part three stories.

PRELIMINARY STATEMENT ON THE MANUFACTURE OF AUTOMOBILES AND AUTOMOBILE BODIES AND PARTS.

Comparative Summary: 1909 and 1914.

	Census				Per Cent. of Increase, 1909-1914
	1914			1909	
	Automobiles	Automobile bodies and parts	Total		
Number of establishments*.	300	971	1,271	743	71.1
Persons engaged in manufacture	91,997	53,954	145,951	85,359	71.0
Proprietors and firm members	60	700	760	405	87.7
Salaried employees	12,630	5,469	18,099	9,233	96.0
Wage earners (average number)	79,307	47,785	127,092	75,721	67.8
Primary horsepower	104,983	68,701	173,684	75,550	129.9
Capital	$312,876,000	$94,854,000	$407,730,000	$173,837,000	134.5
Services	84,901,000	54,552,000	139,453,000	58,173,000	139.7
Salaries	17,966,000	19,560,000	37,526,000	9,479,000	295.9
Wages	66,935,000	34,992,000	101,927,000	48,694,000	109.3
Materials	292,598,000	63,610,000	356,208,000	131,646,000	170.6
Value of products	503,230,000	129,601,000	632,831,000	249,202,000	153.9
Value added by manufacture (value of products less cost of materials	210,632,000	65,991,000	276,623,000	117,556,000	135.3

*In addition, in 1914, 33 establishments primarily engaged in other lines of manufacture, produced automobiles to the value of $6,636,920, and 434 establishments of this character manufactured automobile bodies and parts to the value of $10,515,070; in 1909, similar establishments produced automobiles valued at $830,080 and automobile bodies and parts valued at $4,415,266.

The Growth of the Automobile Industry as Shown by the United States Government Census.

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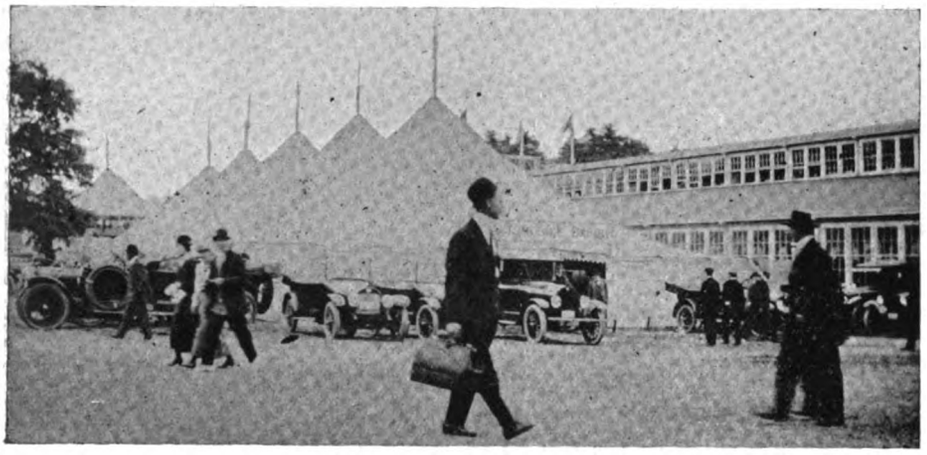
Successful Automobile Show



Five-Pole Tent, Adjoining Show Hall, in Which Overflow Exhibition of New Cars Was Housed.

The Representative of the International Harvester Company, Robert H. Nesbitt, Held His Exhibition in the Open Air. "Plenty of Light on the Subject," He said.

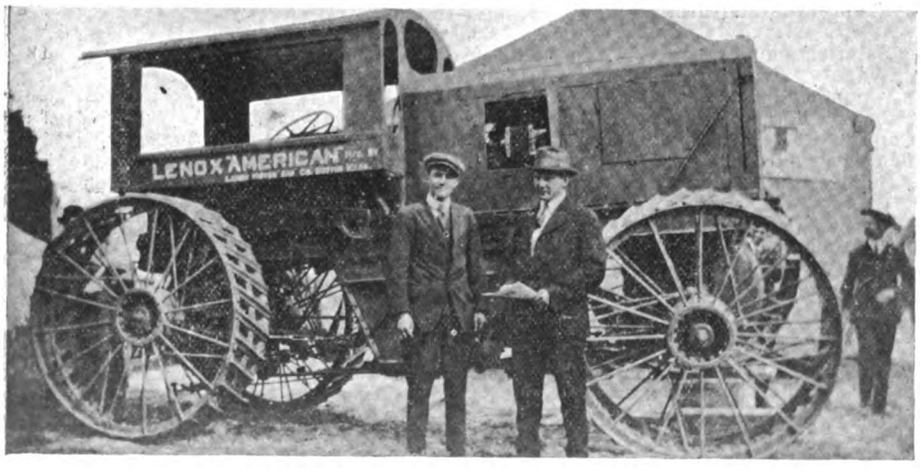
THE Brockton Fair, or what really should have been called the Brockton Automobile Show, as exhibits of motor cars constituted the largest, most valuable and most interesting exhibit on the grounds, was the mecca for eastern New England dealers, among whom were a large number from Boston during the week of Oct. 2-6. The consensus of opinion among them is that the state fair is a medium through which the new models can be successfully introduced to a large number of people.

To house the automobile exhibit at the fair this year a large wooden building was erected at a cost of $25,000, with a main floor and smaller space on a second floor for accessory dealers and manufacturers. The car space was all taken long before the Fair opened and provision was made for the erection of a large tent alongside of the main automobile hall. The tent space was soon oversubscribed and several exhibitors had to place their exhibits in the open on the outside.

In view of the success met with at the Brockton Fair it seems mysterious that automobile distributors were so long in recognizing the great value of such demonstrations. It is a fact that last year several exhibitors had to be almost begged into showing their models at the Fair, while this year even the provision for space far in excess of what was expected to be sold proved inadequate to the point of accommodating less than half those who applied. The reason for this was that not only did dealers close many sales last year during the show, but a large number of prospects "panned out to be 100 per cent."

Roger C. Carter of the Studebaker Corporation of America Only Glanced Up a Minute from the List of Prospects.

Over 150 different models of pleasure cars, trucks and tractors were on exhibition. The John L. Judd Company of Boston exhibited Allen and Auburn cars and two Smith Form-A-Truck jobs under the direction of E. M. Rogers. Mr. Rogers was very enthusiastic over the show owing to the great interest shown in the



R. B. Morton of Lenox Motor Car Co., Boston, Had to Explain That the Big Tractor Was Not a British "Land Battleship."

Overwhelming Patronage of the John L. Judd Line of Allen Cars and Smith Form-A-Truck Made E. M. Rogers Look Serious.

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At Brockton Agricultural Fair.

E. P. Loring of the Loring Motor Car Co. of Brockton, Mass., Jeffery Dealers.

The Big Automobile Exhibition Hall Building Where the Majority of Exhibits of 1917 Models Were on Display.

Judd exhibit.

The Lenox Motor Car Company of Boston had two exceptional features in its exhibition. The new Lenox "Six," which is made in Boston, made its first appearance at this show. Across from the exhibition hall the company had a giant tractor, the Lenox American, on display. This massive machine demanded the attention of everyone partly on account of its unusual design and on account of its great size.

A very complete exhibit was made by the Packard Automobile Company of Boston, in charge of Charles S. Graves. Both the roadster and touring car on the twin-six chassis were shown and also the different Packard truck models, including a handsome piece of fire apparatus, chemical and hose wagon, on a two-ton chassis. This truck was designed by Chief Grady of the Boston fire department.

The Boston branch of the International Harvester Company of America had two International trucks on exhibition, models H and F. There was also a Mogul 8-16 kerosene tractor in this exhibit, which was held outdoors on the main thoroughfare in front of the automobile building and tent. Robert H. Nesbit of the Boston branch was in charge.

Considerable interest was shown in the exhibit of E. Y. Stimson, 650 Beacon street, Boston, distributor of the Detroit electric car. The brougham shown drew much attention. The spectators also enjoyed the novelty of having its merits expounded to them by Mrs. Helen T. Goodwin, a member of the sales force of the Stimson agency, and in charge of the exhibit.

Frank E. Wing, the New England distributor of Marmon cars, had four models of the Marmon in his exhibit, which was one of the features of the show. The Marmon limousine made a particularly striking appearance, having so many distinctive points of design and finish. An enclosed four-passenger roadster, a cloverleaf roadster and a touring car were also shown.

The Boston branch of the Studebaker

F. B. Waitt Could Not Keep His Eyes from the Direction Where a Crowd Was Gathered About His Overland and Willys-Knight Exhibits.

Charles S. Graves, Alvin T. Fuller's Representative, Was Not Out to Lunch. He Was Too Busy to Eat.

Ordinarily H. S. Waite Stands Back of the Grant "Six," but in This Pose We Find Him in Front of It.

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Corporation of America had a large exhibit of 1917 Studebaker models just inside the front doorway of the main building, which was in charge of Roger C. Carter. This exhibit included a seven-passenger touring car, four-passenger landaulet, a roadster and a sedan. A one-ton truck and ½-ton delivery wagon were also shown.

Connell & McKone of Boston, New England distributors of the Overland, had a full line of cars displayed at the front of the centre section of the main hall. The cars were: A Willys-Knight five-passenger, Overland five-passenger, seven-passenger and runabout.

Three models of the Grant Six were shown by the H. S. Waite Company of Boston, New England distributors of that make, and H. S. Waite was personally in charge. The Grant display included a three-passenger roadster, five-passenger touring car and a cabriolet.

A line of Maxwells, including touring cars, roadster and sedan, were shown in the tent by Sylvia & Hathaway, the agents for this car at Brockton.

The Loring Motor Car Company of Brockton, Jeffery agents, displayed three pleasure cars and two trucks in the tent.

King Motors, Inc., of Boston, distributors of King eight-cylinder cars, under the management of F. I. Rennert, displayed three of the new King models, a seven-passenger touring car, a sedan and a roadster. F. W. Greene and W. E. Nourse, also with the King Motors, were in attendance at the show.

The new model Fords, a sedan, a coupe and a touring car, were shown by the City Garage Company of Brockton, which also exhibited three Chalmers models, a cabriolet, a seven-passenger and a five-passenger touring car. These exhibits were in charge of A. W. Curtis and J. T. Weldon.

Three models of the Cadillac 1917 eight, a sedan, a seven-passenger touring car and a coupe were displayed by Cushing Bros. of Campello, Mass. This same agency also displayed a Hudson Super-Six touring car and a town car of the same make.

The Jackson car was represented in four models, shown by E. D. Hartwell of the Jackson Motor Car Company. The new Jackson, which was shown in five and seven-passenger touring models, has the Ferro eight-cylinder, overhead enclosed valve motor.

The Fisher Motor Car Company exhibited the Reo line. W. Payne showed a Paterson touring car and Richard Browning and S. Strand displayed the Crow Elkhart. F. W. Boynton of Boston was the lone exhibitor of trailers, but his exhibit of the Michigan line attracted great interest.

Five Winton Sixes were on exhibition. A roadster, a seven-passenger touring car and limousine, 1917 models were shown in the main building, and two rebuilt machines were on display in the tent annex.

A Garford chassis, truck and combination hose wagon were shown by the Garford company in the tent.

The Brockton Buick Company, F. Q. Bolles agent, displayed four Buick models under the direction of A. E. Bailey, the Middleboro Buick representative.

The White Motor Car Company showed a delivery truck, a touring car and a two-ton truck.

Two Saxon cars were shown by the Brockton Sporting Goods Company. George A. Gove and Leon Crocker were in charge.

Oldsmobile and Chandler Six models were shown by Arthur L. Turner and A. Illingworth.

Other cars displayed were the Velie, Daniels, Hupmobile, Oakland, Paige, Peerless, Haynes, Jordan, Fiat, Dodge, Locomobile, Mitchell, Regal and Scripps-Booth.

The Vim delivery car and Denby trucks were also among the exhibits.

Exhibitors in the accessory gallery of the main hall were: Massachusetts Packing and Belting Co., La-Lo lubricants, in charge of George R. Thurber; John J. Heany and Charles Brenkenvacht, revivo auto polish; Tom Cann & Co., Goodyear tires; United Tire Co.; Kenedian Auto Supply Co.; Tremaine Electric Co.; A. I. Task; Crocker Rubber Co.; Howard Rand and Joseph Hubbard, No-Glare reflectors.

ACCESSORY SHOW EXHIBITORS.

115 Members of Motor and Accessory Manufacturers Allotted Space for New York and Chicago.

At a meeting of the show and allotment committee of the Motor and Accessory Manufacturers held Oct. 13 at West 33d street, New York, N. Y., the allotment of space of 115 association members was completed for the 17th annual national automobile shows at New York and Chicago. The number of accessory exhibitors, as well as the area of space assignments, was considerably greater than heretofore. The following were assigned space at the shows mentioned:

NEW YORK AND CHICAGO.

A. B. C. Starter Co.
American Bronze Co.
American Hardware Corp.
Corbin Screw Corp. Division
Au-To Compressor Co., The
Automobile Supply Mfg. Co.
Benford Mfg. Co.
Brown-Lipe Chain Co.
Brown-Lipe Gear Co.
Brunner Mfg. Co.
Buda Co., The
Byrne-Kingston & Co.
Carr Co., F. S.
Celfor Tool Co.
Champion Ignition Co.
Corning Glass Works
Cowles & Co., C.
Corcoran-Victor Co.
Cramp & Sons Ship and Engine Building Co., Wm.
Dann Products Co.
Detroit Weatherproof Body Co.
Dixon Crucible Co., Joseph
Doehler Die Casting Co.
Dyneto Electric Co.
E. A. Laboratories Co.
Eclipse Machine Co.
Electric Storage Battery Co.
Evapco Mfg. Co.
Ferro Machine and Foundry Co.
Findeisen & Kropf Mfg. Co.
Gabriel Mfg. Co.
Gemco Mfg. Co.
General Electric Co.
Globe Machine and Stamping Co.
Gould Storage Battery Co.
Gray & Davis
Halladay Co., L. P.
Hall-Thompson Co.
Hartford, Inc., Edward V.
Hassler, Robert H.
Hayes Mfg. Co.
Hayes Wheel Co.
Heinze Co., The John O.
Heinze Electric Co.
Kellogg Mfg. Co.
Kent Mfg. Works, Atwater
Klaxon Co.
Kokomo Electric Co.
Leather Tire Goods Co.
Leece-Neville Co., The
Lipman Air Appliance Co.
Lumen Bearing Co.
Mann Co., F. W.
Master Carburetor Corp.
Mosler & Co., A. R.
Motometer Co.
New York Coil Co.
North East Electric Co.
Otis Elevator Co.
Pantasote Co., The
Parry Mfg. Co.
Perfection Spring Co., The
Piel Co., The G.
Prest-O-Lite Co., The
Royal Equipment Co., The
Sager Co., J. H.
Schrader's Son, Inc., A.
Shakespeare Co.
Shaler Co., C. A.
Sparks-Withington Co., The
Splitdorf Electrical Co.
Springfield Body Co., The
Standard Thermometer Co.
Standard Welding Co., The
Stewart-Warner Speedometer Corp.
Stromberg Motor Devices Co.
U. S. Light and Heat Corp.
Universal Shock Eliminator, Inc.
Vacuum Oil Co.
Van Sicklen Co., The
Veeder Mfg. Co., The
Voorhees Rubber Mfg. Co.
Wagner-Hoyt Electric Co.
Waltham Watch Co.
Westinghouse Electric and Mfg. Co.
West Side Foundry Co.
Wheeler-Schebler Carburetor Co., Inc.
Willard Storage Battery Co., The

NEW YORK ONLY.

Blackledge Mfg. Co., J. W.
Bosch Magneto Co.
Breeze Carburetor Co.
Budd Mfg. Co., Edward G.
English & Mersick Co., The
General Bakelite Co.
Hale & Kilburn Co.
Hartford Machine Screw Co.
Herz & Co.
Janney-Steinmetz & Co.
Light Mfg. and Foundry Co.
Morse Chain Co.
Rubber Insulated Metals Corp.
Syracuse Malleable Iron Works
Ward Leonard Electric Co.
Zenith Carburetor Co.

CHICAGO ONLY.

Badger Brass Mfg. Co., The
Continental Motors Co.
Edison Storage Battery Co.
Garford Mfg. Co., The
Imperial Brass Mfg. Co., The
Oakes Co., The
Remy Electric Co.
Simms Magneto Co., The
Vesta Accumulator Co.
Warner Gear Co.
Waukesha Motor Co.
Wilson & Co.

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Accessory Jobbers' St. Louis Convention a Great Success.

Constructive Work Accomplished at the Meeting Concerns Every Interest in the Industry. Fifty-Three Members Added to Membership.

THE convention of the National Association of Automobile Accessory Jobbers, held at St. Louis during the first part of the present month, was a great success, resulting in an increase to 291 in membership and the consolidation of interests of a large number of the most prominent firms and individuals in this branch of the automobile industry.

While the important outcome of the convention was the large addition of members, there was also considerable business accomplished that will work for the welfare of the trade throughout the country. During the week 34 manufacturing concerns and 10 jobbers were made members of the association, making a total of 147 jobbers and 144 manufacturers.

The key note of the convention was co-operation, the object for which the organization was formed a year and a half ago and all the progress made was towards this end. A general discussion was held regarding the practises and methods to be employed by the organization in furthering its ends and certain recommendations were adopted governing the action of the members in these matters.

One of the main points discussed was the assistance to be given dealers by jobbers. A report on this work was received from the committee on assisting the trade, of which Stanley Roberts of the Roberts-Toledo Auto Company is chairman. Mr. Roberts and O. R. McDonald of the Herring Motor Company, Des Moines, Ia., had made an investigation of the subject prior to making their report, which was acted upon and supported with a vote in favor of expending $1000 before the January meeting in carrying out recommendations.

After discussing the garage man's status as a merchandiser the report goes on to say that as a dealer he needs assistance and this should come through combined co-operation of the manufacturer and jobber. The report in this relation says: "Your committee believes that a national campaign would accomplish splendid results and that this campaign should be conducted along the line of national publicity in selected trade papers.

"Your committee therefore asks that you authorize them to expend not more than $1000 in trade papers during the three or four months preceding the next meeting. Results of such work will then be better known and brought up before the meeting."

A campaign of education was also urged in the following paragraph:

"That the manufacturer's division appoint a committee to investigate the requirements of the dealer and the jobber. That a campaign of education be entered into by both the jobber and the manufacturer, with the idea of teaching the dealer the use of proper advertising for the purpose of establishing the connection between the consumer demand created by the manufacturer's publication advertising and the source of supply which is the dealer's stock."

The committee on standardizing shipping packages made a number of recommendations regarding the packing of goods that are to go through jobbers to dealers. The packing of spark plugs and other small accessories in smaller packages was suggested as a means of saving the jobber the trouble of repacking and also to aid the dealer in making a more advantageous window display.

The report made by this committee in part was as follows:

"Price per gross lots: We believe that the manufacturers now listing their goods by the gross, or 144 pieces, should base their prices on lots of 100 pieces.

"Movement should be toward small unit packages put up in a substantial manner, plainly labeled with cut of article, which would assure manufacturer's product reaching consumer in good condition; a convenient unit for the jobber to sell to dealer, who then can make a proper display on his shelf.

"The printing of retail prices on the labels of boxes, or the enclosing of price slips or circulars in the packages defeats its own purpose—convenience to the dealer—in case prices advance as they have in the past, as in this way he is often compelled to sell at the advertised prices, although his prices on the goods have advanced."

Recommendations were also made as follows:

"That brake lining be shipped to the jobber in standard rolls of 50 feet; that canned products should come in unit packages of ¼, ½ and one-pint cans, one dozen in a unit and larger sizes less than a unit; that different kinds of tire patches, boots, etc, be packed in boxes of different colors; that spark plugs should be packed in packages of 12 to 25 instead of 100; that the smaller items, such as pliers, wrenches, etc., be packed in packages of 12 to 25 as separate containers instead of in single boxes as is the rule with manufacturers at present."

As to methods of shipping the following resolution was adopted:

"We deem it not unreasonable that a manufacturer expect the jobber to carry sufficient stock of his product to supply demands in his territory, but we believe that the question of making direct shipments to the customers of the jobber is a matter which should be left to the discretion of the manufacturer."

Many of the members present were opposed to the old practise of supplying dealers with catalogues and as a result a resolution was passed in which the opinion of the association was expressed in the closing paragraph as follows:

"That this organization discourage and discontinue this practise and condemns in the strongest possible terms the furnishing of such catalogues and quoting of special discounts by jobbers to dealers who have furnished such catalogues."

Discussion of the basis of terms of payment between the jobber and manufacturer hinged on the question of discounts, it being contended that some of the larger discounts for cash settlements offered by the manufacturers really constituted a cut in price. As a remedy for this condition the following resolution was offered and adopted:

"The habit of some jobbers of not adhering strictly to the terms of sale works hardship on the manufacturer.

"That the buyer adhere strictly to the purchase terms, whether these terms include a cash discount or are net. However, we recommend that manufacturers arrange their schedule of prices on a basis to permit of a discount for cash in 10 days or on the 10th prox. of not less than two per cent."

Another resolution was passed recommending that whenever a considerable quantity of a manufacturer's product be offered for sale at below market prices as a result of a bankruptcy sale, or for the purpose of closing out or liquidating a stock, that said manufacturer offer to purchase such merchandise if it is in salable condition to prevent its being thrown on the market at demoralizing prices.

The matter of guarantees on accessories was disposed of in the following resolution:

"The practise indulged in by some manufacturers of covering their goods with an unreasonable guarantee is detrimental to the trade and a nuisance and expense to the jobber. We condemn such practises and more especially the practise of a 10 or 30-day trial on any article of merchandise offered for sale."

Charles Nagel, former Secretary of the Interior of the United States, and H. G. Wilson, traffic commissioner of the Toledo Commerce Club, were principal outside speakers at the convention. Mr. Nagel spoke on business co-operation and Mr. Wilson talked about freight rates and traffic regulation.

The financial statement of the N. A. A. J. up to Aug. 31 showed total receipts of $34,474.31 and expenditures of $25,129.54, leaving a balance on hand of $9344.77 in cash, which, combined with a $17,000 investment in bonds, gives the organization total quick assets of $26,344.77.

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N. A. A. A. J. JOBBERS' LIST.

There Are Now 147 Jobbers and 144 Manufacturers in the Association's Membership List.

This is the list of jobbers compiled by the National Association of Automobile Accessory Jobbers. Those so indicated by an asterisk (*) are members of the association, and those given in the Associate Members list, constitute the present membership of the organization.

Alabama.
*Brownell Auto Co.....Birmingham
*Drennen Motor Car Co.....Birmingham

Arkansas.
Rose-Lyon Hardware Co.....Little Rock

California.
*Featherstone, E. A.....Los Angeles
Union Hardware & Metal Co..Los Angeles
Waterhouse-Lester Co.....Los Angeles
*Western Rubber & Sup. Co..Los Angeles
Day & Co., E. J.....Oakland
Waterhouse-Lester Co.....Oakland
Kimball-Upson Co.....Sacramento
Remick Co., James S.....Sacramento
*Auto Tire Co.....San Diego
Gavin-Williams Co.....San Diego
*Campbell-Collins Co.....San Jose
Beckley-Ralston Co.....San Francisco
*Chanslor & Lyon Co.....San Francisco
*Electric Appliance Co.....San Francisco
*Lathan Auto Supply Co,...San Francisco
*McCoy Motor Supply Co..San Francisco
Mohrig Bros.....San Francisco
Pacific Hardware & Steel Co..San Francisco
Waterhouse-Lester Co.....San Francisco
*Weinstock-Nichols Co.....San Francisco

Colorado.
*Auto Equipment Co.....Denver
Quinn & McGill Motor Supply Co..Denver
*B. K. Sweeney Electrical Co....Denver

Connecticut.
Post & Lester.....Hartford
Horton, Henry.....New Haven
*Mersick & Co., C. S.....New Haven

District of Columbia.
*National Electric Sup. Co..Washington
*Rubel & Co., Charles.....Washington
*Miller Bros. Auto & Supply House Washington

Florida.
*Baughman Co., G. Norman.....Tampa

Georgia.
*Alexander-Seewald Co.....Atlanta
*Elyea-Austell Co.....Atlanta

Illinois.
*Automobile Supply Co.....Chicago
Beckley-Ralston Co.....Chicago
Butler Bros.....Chicago
*Chicago Automobile Sup. House..Chicago
Chicago Rubber Co.....Chicago
*Electric Appliance Co.....Chicago
Hibbard, Spencer, Bartlett Co....Chicago
*Hine-Watt Mfg. Co.....Chicago
*E. D. Kimball & Co.....Chicago
*Motor Car Supply Co.....Chicago
Western Electric Co.....Chicago
*Graham-Selzer Co.....Peoria
*National Elec. & Auto Sup. Co....Peoria
*Reid Motor Co.....Quincy
Tank Hardware Co.....Quincy

Indiana.
*Orr Iron Co.....Evansville
Central Rubber & Sup. Co..Indianapolis
*Gibson Co.....Indianapolis
Hearsey Co., H. T.....Indianapolis
*W. J. Holliday & Co.....Indianapolis
*Van Camp Hard. & Iron Co..Indianapolis
*Wheeler & Scheerin.....Indianapolis

Iowa.
Rice & Dayton Mfg. Co.....Cedar Falls
*Seig Iron Co.....Davenport
Central Automobile Sup. Co...Des Moines
*Herring Motor Co.....Des Moines
*Hippee-Henley Motor Sup. Co. Des Moines
*Warnock Co., William.....Sioux City

Kansas.
Blish, Mize & Silliman.....Atchison
Harwi Hardware Co., A. J.....Atchison
*Auto Supply Co., The.....Hutchinson
Lee Hardware Co.....Salina
*Southwick Auto Supply Co.....Topeka
Thompson Hardware Co., W. A. L..Topeka
*Auto Supply & Tire Co.....Wichita
*Hagberg Rubber Co.....Wichita
Shattuck-George Iron Co.....Wichita

Kentucky.
Belknap Hardware & Mfg. Co..Louisville
*Cowan & Co., Andrew.....Louisville
Harbison & Gathright Co.....Louisville
*Louisville Auto Supply Co....Louisville
*Warner Co., Roy E.....Louisville

Louisiana.
*Electric Appliance Co.....New Orleans
*Interstate Electric Co.....New Orleans
*Shuler Rubber & Supply Co.New Orleans

Maine.
Darling Auto Co.....Auburn
*Bragg & Sons, N. H.....Bangor
Rice & Miller.....Bangor
Bailey Co., James.....Portland
Cleveland Co., L. W.....Portland

Maryland.
*Auto Supply Co.....Baltimore
Keidel & Sons, H. W.....Baltimore
Norris & Co., R. W.....Baltimore

Massachusetts.
American Motor Equipment Co....Boston
Bigelow & Dowse Co.....Boston
Iver Johnson Sporting Goods Co..Boston
Linscott Supply Co.....Boston
Motor Car Equipment Co.....Boston
Post & Lester.....Boston
Standard Tire & Rubber Co.....Boston
*Wetmore Savage Co.....Boston
Iver Johnson Sporting Goods Co..Fitchburg
Chapman & Brooks.....Springfield
*Tarbell-Watters Co.....Springfield
Alsten & Goulding Co.....Worcester
Iver Johnson Sporting Goods Co., Worcester

Michigan.
*Automobile Equipment Co.....Detroit
*Automobile Supply Co.....Detroit
*Bowman, E. A.....Detroit
*General Sales Co.....Detroit
*Roehm & Davison.....Detroit
Standart Bros.....Detroit
*Cumings Bros.....Flint
*Becker Auto Supply Co....Grand Rapids
Sherwood-Hall Co.....Grand Rapids
*Tisch Auto Supply Co....Grand Rapids
Moreley Bros.....Saginaw
Saginaw Hardware Co.....Saginaw

Minnesota.
Kelly-How-Thompson Co.....Duluth
Marshall-Wells Hardware Co.....Duluth
Clark & Son, George A.....Minneapolis
Hudson & Thurber Co.....Minneapolis
Janney-Semple-Hill Co.....Minneapolis
*Minneapolis Iron Store Co..Minneapolis
*Reinhard Bros. Co.....Minneapolis
*Western Motor Supply Co..Minneapolis
Williams Hardware Co.....Minneapolis
*Electric Mfg. Co.....St. Paul
Farwell, Ozmun, Kirk & Co.....St. Paul
Hackett, Gates & Hurty.....St. Paul
*Nicols, Dean & Gregg.....St. Paul
*Smith & Co., C. J.....St. Paul
*Sommers & Co., G.....St. Paul

Missouri.
Joplin Supply Co.....Joplin
*Bonniwell-Calvin Iron Co...Kansas City
*Equipment Co.....Kansas City
*Kansas City Auto Sup. Co..Kansas City
*Motor & Machinists Sup. Co..Kansas City
Richards & Conover Hdw. Co..Kansas City
Trownsley Metal & Hdw. Co..Kansas City
*Farmer Auto Supply Co.....St. Joseph
Wyeth Hardware Co.....St. Joseph
*Beck & Corbitt Iron Co.....St. Louis
*Campbell Auto Sup. Co., Fred..St. Louis
Campbell Iron Co.....St. Louis
*Missouri Auto Specialty Co....St. Louis
*Phoenix Auto Supply Co.....St. Louis
Shapleigh Hardware Co.....St. Louis
Sickles Saddlery Co.....St. Louis
Simmons Hardware Co.....St. Louis
Sligo Iron Store Co.....St. Louis
*Straus Saddlery Co.....St. Louis
Wesco Supply Co.....St. Louis

Montana.
Northwestern Auto Supply Co....Billings

Nebraska.
Paxton & Gallagher Co.....Auburn
*The Korsmeyer Co.....Lincoln
*Nebraska-Buick Auto Co.....Lincoln
Omaha Rubber Co.....Omaha
Paxton & Gallagher Co.....Omaha
*Powell Supply Co.....Omaha
U. S. Auto Supply Co.....Omaha
*Western Automobile Supply Co..Omaha
Wright & Wilhelmy Co.....Omaha

New Jersey.
*Economy Auto Supply Co.....Newark
Motor Car Equipment Co.....Newark
Thompson-Reilly Co.....Newark

New York.
Albany Hardware & Iron Co.....Albany
*Bindrim, Julius.....Brooklyn
Martin-Evans Co.....Brooklyn
Iroquois Rubber Co.....Buffalo
*Strauss & Co., Joseph.....Buffalo
Barker, Rose & Clinton Co.....Elmira
McRae & Co., H. A.....Glens Falls
*Davis-Browne Electric Co.....Ithaca
Thompson, H. D.....Malone
*Lowe Motor Supply Co.....New York
Motor Car Equipment Co.....New York
*Picard & Co., A. J.....New York
*Pruden Hardware Co., W. E..New York
Whittemore-Sime Co.....New York
Marshall Co., A. H.....Plattsburg
Meyers Hardware Co., M. O....Plattsburg
*Van Benschoten, John.....Poughkeepsie
U. S. Rubber Co.....Rochester
Olmstead Co. The.....Syracuse
Syracuse Rubber Co.....Syracuse
U. S. Rubber Co.....Syracuse
Utica Cycle Co.....Utica
Wood Auto Supply Co.....Utica

North Carolina.
*Carolinas Auto Supply House..Charlotte

North Dakota.
*Grant, J. D.....Fargo

Ohio.
Hardware Supply Co.....Akron
*C. & D. Auto Supply Co.....Cincinnati
*Cooper Rubber Co., I. J.....Cincinnati
*Ohio Rubber Co.....Cincinnati
*Toewater & Co., G. M.....Cincinnati
Bingham Co., W.....Cleveland
Collister & Sayle Co.....Cleveland
Lockwood- Luetkemeyer-Henry Co., Cleveland
*M & M Co.....Cleveland
*Pennsylvania Rub. & Sup. Co..Cleveland
Worthington Co., George.....Cleveland
*Griswold-Sohl Co.....Columbus
*Justus & Parker Co.....Columbus
Tracy-Wells Hardware Co.,...Columbus
*Schroyer & Co., G. W.....Dayton
Wagner Hardware Co.....Mansfield
Bostwick & Braun.....Toledo
*Roberts-Toledo Auto Co.....Toledo
*Toledo Rubber Co.....Toledo
*Toledo Tire & Supply Co.....Toledo
*Union Supply Co.....Toledo
Stanbaugh-Thompson Co.....Youngstown

Oklahoma.
*Burwell-Smith Supply Co..Oklahoma City
*Burwell Supply Co., J. B..Oklahoma City
Richards & Conover Hardware Co., Oklahoma City
Severin Tire & Supply Co..Oklahoma City

Oregon.
Archer-Wiggins Co.....Portland
*Ballou & Wright.....Portland
Marshall-Wells Hardware Co...Portland

Pennsylvania.
*Johnstown Automobile Co....Johnstown
*Beers Bros. Co.....Oil City
*Gaul, Derr & Shearer Co..Philadelphia
*Manufacturers Supplies Co..Philadelphia
*McCullough & Son, J. B....Philadelphia
Miller & Co., George C.....Philadelphia
Nock Co., George W.....Philadelphia
*Roberts Electric & Supply Co., H. C., Philadelphia
*Dyke Motor Supply Co.....Pittsburg
*Jackson Motor Supply Co.....Pittsburg
Logan & Gregg Hardware Co..Pittsburg
*Pittsburg Auto Equipment Co..Pittsburg
Pittsburgh Rubber Co.....Pittsburg
*Woodwell Co., Joseph.....Pittsburg
Fry, Keyser.....Reading
*Lansing Hardware Co.....Scranton

Rhode Island.
*Belcher & Loomis Hdw. Co..Providence
*Goodby-Rankin Co.....Providence
Waite Auto Supply Co.....Providence

South Carolina.
Bailey-Lebby Co.....Charleston
*Cameron & Barkley Co.....Charleston
*Francke & Co., C. D.....Charleston

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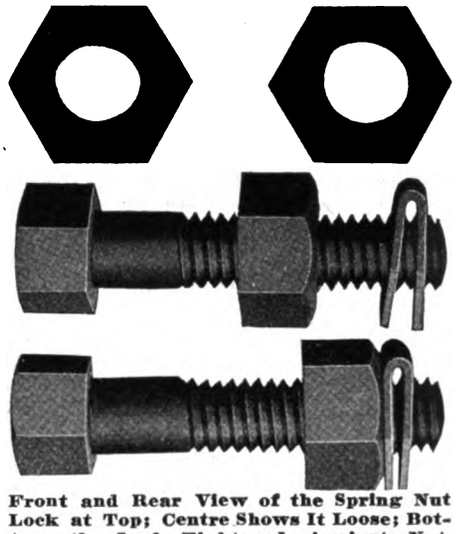
South Dakota.
*Brownell Co., H. F.....Sioux Falls
Dakota Iron Store.....Sioux Falls
Paxton & Gallagher Co.....Deadwood
Tennessee.
*Southern Auto Supply Co..Chattanooga
*Ozburn Automobile Supply Co..Memphis
Gray & Dudley Hardware Co..Nashville
Texas.
*General Auto Supply Co.....Amarillo
Walter Tips Co.....Austin
*Electric Appliance Co.....Dallas
*Ferris-Dunlop Automobile Sup. Co..Dallas
*Fisk Co. of Texas.....Dallas
Krakauer, Zork, Moyes Co.....El Paso
*Tri-State Motor Co.....El Paso
Western Motor Supply Co.....El Paso
*Hawkins Auto Sup. Co., G. W..Houston
Meyer Co., Joseph F.....Houston
Peden Iron & Steel Co.....Houston
Peden Iron & Steel Co.....San Antonio
*Spencer-Carroll Co.....Waco
Utah.
*Intermountain Electric Co..Salt Lake City
Vermont.
Hagar Hdw. & Paint Co.....Burlington
Virginia.
*Piedmont Hardware Co.....Danville
*Chemi Co.....Richmond
*Crump Co., B. T.....Richmond
*Talman Auto Supply Co.....Richmond
Washington.
Marshall-Wells Hardware Co....Seattle
Automobile Supply Co.....Tacoma
Child, Day & Churchill Co.....Spokane
Holly-Mason Hardware Co.....Spokane
Marshall-Wells Hardware Co....Spokane
Spokane Cycle & Supply Co.....Spokane
Wisconsin.
Auto Supply Co.....Milwaukee
*Morley-Murphy Hdw. Co.....Green Bay
*Androe & Sons Co., Julius....Milwaukee
*Gross Hardware Co., Philip..Milwaukee
Pritzlaff Hardware Co., John..Milwaukee
*Shadbolt & Boyd Iron Co....Milwaukee
*Western Motor Supply Co....Milwaukee
Wyoming.
Paxton & Gallagher Co.....Cheyenne
Canada.
Wood, Vallance & Co.....Calgary
*Motor Car Supply Co.....Calgary
Wood, Vallance & Co.....Hamilton
*Canadian Fairbanks-Morse Co..Montreal
*Millen & Son, Ltd., John.....Montreal
Cutten & Foster.....Toronto
*Hyslop Bros.....Toronto
Wood, Vallance & Co.....Winnipeg

ASSOCIATE MEMBERS.

*New members.
California.
Plummer Mfg. Co., W. A..San Francisco
Connecticut.
Royal Equipment Co.....Bridgeport
Fitzgerald Mfg. Co.....Torrington
Illinois.
Advance Felt & Cutting Co.....Chicago
*American Electrical Co.....Chicago
Atlas Auto Supply Co.....Chicago
Atlas Specialty Mfg. Co.....Chicago
Browns & Caine.....Chicago
*Brunswick-Balke-Collender Co..Chicago
Chicago Fuse Mfg. Co.....Chicago
Edelman & Co., E.....Chicago
Federal Miniature Lamp Div. of General Electric Co.....Chicago
Findeisen & Kropf Mfg. Co.....Chicago
Firestone Tire & Rubber Co.....Chicago
Ideal Sheet Metal Works.....Chicago
Illinois Brass Mfg. Co.....Chicago
Manhattan Electrical Supply Co..Chicago
Mayo Mfg. Co.....Chicago
Metal Specialty Mfg. Co.....Chicago
Nelson Mfg. Co., A.....Chicago
Niehoff & Co., Paul G.....Chicago
Premier Electric Co.....Chicago
Sunderland Mfg. Co.....Chicago
Tuthill Spring Co.....Chicago
*Van Cleef Bros.....Chicago
*Warner Lenz Co.....Chicago
Peoria Overland Washer Co.....Peoria
Weaver Mfg. Co.....Springfield
*L. P. Halladay Co.....Streator
Indiana.
Double Fabric Tire Co.....Auburn
Indiana Lamp Co.....Connersville
*Gates Mfg. Co.....Indianapolis
Oakes Co., The.....Indianapolis
Wheeler & Schebler.....Indianapolis
*Crum-Wiley Co.....Peru
Iowa.
Midland Supply Co.....Davenport
C. & E. Mfg. Co.....Marshalltown
Kansas.
Crum Mfg. Co.....Ottawa
Massachusetts.
Frank Mossberg Co.....Attleboro
Gray & Davis, Inc.....Boston
*Wondermist Co.....Boston
Walden Mfg. Co.....Worcester
Michigan.
Edmunds & Jones Mfg. Co.....Detroit
Gearless Differential Co.....Detroit
Hayes Mfg. Co.....Detroit
New Era Spring & Specialty Co..Detroit
*White Star Refining Co.....Detroit
*Lockwood-Ash Motor Co.....Jackson
Sparks-Withington Co.....Jackson
*Piston Ring Co.....Muskegon
National Standard Co.....Niles
Durkee-Atwood Co.....Minneapolis
Missouri.
*Carter Carburetor Co.....St. Louis
Curtis Pneumatic Machinery Co..St. Louis
*Kant Leek Mfg. Co.....St. Louis
McQuay-Norris Mfg. Co.....St. Louis
Pull-U-Out Sales Co.....St. Louis
*Shurnuff Mfg. Co.....St. Louis
New Jersey.
*Asbestos Rubber Wks. of N. J..Camden
Hartford Suspension Co.....Jersey City
Voorhees Rubber Co.....Jersey City
Endurance Tire & Rubber Co., New Brunswick
*Splitdorf Electrical Co.....Newark
*Whitehouse-Le Compte Co.....Newark
Tingley & Co., Charles O.....Rahway
Thermoid Rubber Co.....Trenton
New York.
Automobile Supply Mfg. Co....Brooklyn
*E. A. Laboratories Co.....Brooklyn
Grossman Mfg. Co., Emil.....Brooklyn
Marvel Mist Mfg. Co.....Brooklyn
Sears-Cross Co.....Brooklyn
Manzel Bros. Co.....Buffalo
Judd & Leland Mfg. Co....Clifton Springs
Crescent Tool Co.....Jamestown
American Ever Ready Works, Long Island City
Metal Stamping Co.....Long Island City
Piel Co., G.....Long Island City
*Bergwald Mfg. Co.....New York
B. & L. Auto Lamp Co.....New York
Herz & Co.....New York
Johns-Manville Co., H. W.....New York
Keyless Auto Clock Co.....New York
Laminated Shim Co.....New York
*Livingston Radiator & Mfg. Co. New York
Manhattan Electrical Sup. Co..New York
Moto-Meter Co.....New York
*New York & New Jersey Lubricant Co.....New York
*Niagara Fabric Mfg. Co.....New York
*Platt & Washburn Refining Co. New York
*Schlesinger-Redburn Corp....New York
Silvex Co.....New York
Stevens & Co.....New York
*Wolverine Lubricants Co.....New York
U. S. Light & Heat Corp....Niagara Falls
Benford Mfg. Co.....Mt. Vernon
Mosler & Co., A. R.....Mt. Vernon
Kellogg Mfg. Co.....Rochester
Brunner Mfg. Co.....Utica
Ohio.
General Tire & Rubber Co.....Akron
*Ashland Mfg. Co.....Ashland
Perkins-Campbell Co.....Cincinnati
Victor Lamp Co.....Cincinnati
Bigsbory-Rotary Mfg. Co.....Cleveland
Brown Spring Oiler Co.....Cleveland
Globe Machine & Stamping Co..Cleveland
Jiffy-Jack Co.....Cleveland
K. W. Ignition Co.....Cleveland
*Marvel Accessories Mfg. Co....Cleveland
National Motor Supply Co.....Cleveland
Nungesser Carbon & Battery Co. Cleveland
Reflex Ignition Co.....Cleveland
Sharp Spark Plug Co.....Cleveland
Standard Welding Co.....Cleveland
*Columbus Varnish Co.....Columbus
Gordon Co., J. P.....Columbus
Davies-Young Soap Co.....Dayton
Adamson Mfg. Co.....East Palestine
McGraw Tire & Rub. Co..East Palestine
Temco Electric Motor Co.....Leipsic
Northwestern Chemical Co.....Marietta
Central Brass & Fixture Co....Springfield
*John O. Heinze Co.....Springfield
Victor Rubber Co.....Springfield
Champion Spark Plug Co.....Toledo
*Packard Electrical Co.....Warren
Au-To Compressor Co.....Wilmington
Pennsylvania.
American Bronze Co.....Berwyn
Standard Steel Box Co.....Bridgeville
Atwater Kent Mfg. Works..Philadelphia
*Crew-Levick Co.....Philadelphia
Rhode Island.
Auto Parts Co.....Providence
South Carolina.
*General Asbestos & Rubber Works Charleston
Tennessee.
American Lava Co.....Chattanooga
Washington.
Romort Mfg. Co.....Seattle
Wisconsin.
Auto Parts Mfg. Co.....Milwaukee
Federal Rubber Mfg. Co.....Milwaukee
Fulton Co., The.....Milwaukee
Gemco Mfg. Co.....Milwaukee
Milwaukee Auto Eng. & Sup. Co. Milwaukee
Harvey Spring & Forging Co.....Racine
Walker Mfg. Co.....Racine
Shaler Co., C. A.....Waupun

SPRING NUT LOCK.

This is an extremely simple device which its makers are confident will revolutionize the manner of securing nuts on bolts, etc., in all kinds of industrial activities. The lock consists of two octagonal plates of thin steel stamped out of one piece, leaving a joint on one of its



Front and Rear View of the Spring Nut Lock at Top; Centre Shows It Loose; Bottom, the Lock Tightened Against Nut.

eight sides. Circular holes to fit the bolt in use are punched in each plate, and the plate is bent over until the two holes are almost parallel—almost, but not quite, as one hole slightly overlaps the other. The joining side acts as a hinge and, after being tempered, as a powerful spring. When the lock is slipped on the bolt and both legs engage the thread, the holes in each are brought in alignment and because of this forced alignment the spring pushes and pulls on the respective legs, causing each to engage on opposite sides of the thread valley. The principle is that when these are tightened into place next the nut the opposing holds grip with the tenacity of a vise. The device is stated not only to make it impossible for the nut to drop off, but holds it securely at the point at which it is placed. The first sizes to be placed on the market are 1, ⅞, ½ and ¼ inch. By Nov. 1 it is expected that production will be increased to include every bolt size now in use.

Marketed by the Spring Nut Lock Co., 651 Transportation Building, Chicago, Ill. Prices on request.

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Important Decision Effecting Lending of Money on Accounts Receivable.

By Elton J. Buckley.

THERE are concerns springing up all over the country which make a practise of providing ready money for business men by advancing them money on their accounts receivable. Not only are concerns coming into existence for the express purpose of doing that and nothing else, but trust companies, already established and doing a regular trust company business, are taking on the purchase of accounts as a side line.

The National Credit Men's Association considers the whole scheme an evil, because it is apt to deceive a credit man who includes in his estimate of a customer's worth the usual item of "book accounts," which often run high. If the book accounts have already been borrowed on the customer's real worth may be considerably less than it was thought to be. The association will ask for legislation compelling a business man who borrows on his book accounts to disclose the fact to his creditors.

The Illinois Supreme Court has just handed down a decision in a very important case involving the practise of borrowing on accounts receivable, after the manner described above. The law laid down there, which would probably be adopted by almost any court in the country, may change the entire method now used for loaning money on accounts receivable. In the case referred to (Mercantile Trust Company vs. Kastor, 112 N. E. 988, Illinois Supreme Court) the court said that the whole scheme, as practised, was illegal, because the trust company was getting usury from the concerns who borrowed on their accounts receivable. I have reason to believe that the form of agreement which the Mercantile Trust Company used, and which was passed upon by the Illinois court, is substantially used by every concern that lends on accounts receivable. If that is true, it follows that they are all practising usury.

In the Illinois case the trust company advanced 77 per cent. upon all accounts which it accepted. If the account was paid to it within 15 days a charge of one per cent. was made, if paid in 30 days it charged two per cent. and one per cent. additional for each 30 days thereafter that the account remained unpaid. The merchant was to pay all legal fees and collection expenses. The agreement was drawn with the intention of making a sale of the accounts. The case before the courts was to determine whether it was actually a sale or a pledge. If the accounts were sold the fee was proper, but if the accounts were merely pledged as collateral, the fee, considered as interest, was usurious.

Mr. Buckley is a member of the bar in the state in which he is resident and is counted among the leading members of his profession. In addition to contributing a special article of general interest each month he will answer any special question which a subscriber may desire information upon, either by mail or through the columns of this department. It is essential that the inquirer sign his name to each inquiry, but only the initials or a pseudonym will be published. The service is free of charge to subscribers. Inquiries should be addressed to the Legal Department, Accessory and Garage Journal.

The following is from the court's decision, in which it held that it made no difference that the trust company had tried to make the transaction appear to be a sale of Kastor's accounts; the fact was that it was merely a loan:

In our judgment the contract between the Trust Company and Kastor is not an agreement for the sale of accounts, but is an agreement for the loan by the trust company to Kastor upon the pledge of the latter's accounts of 77 per cent. of the face of the accounts at a rate of interest equal to one per cent. additional for each additional 30 days from the date of the advancement of the money until its repayment. The agreement fixed no price at which the whole interest in the accounts was to be purchased, but contains a scale of percentages for ascertaining the proportion to be retained by the trust company and the proportion to be paid to Kastor out of the accounts when collected.

While it says that the trust company is to pay a percentage of the face value of the accounts on a descending scale from 99 per cent., according to the time when they shall be paid, the instrument goes on at once to provide that the trust company shall never be required to pay to exceed 77 per cent. of the face value. If anything additional was to be received by Kastor it was to come from the collection of the accounts themselves and not from the trust company.

The trust company was in no event to advance more than 77 per cent. of the face of the accounts, and in no event was it to receive less than the amount advanced, with interest at the rate of one per cent. of the face of the accounts for the first 15 days, one per cent. for the second 15 days and one per cent. for each 30 days after the first 30 days.

While the parties to the contract have carefully used language appropriate to a sale, the instrument, when complete, evidences not a sale, but a pledge for the security of a loan.

The contract sufficiently shows that the transaction was intended to be a mere pledge of the accounts for a loan of money at a usurious rate of interest. The instrument bears on its face conclusive evidence that it is merely a device to receive more than the law allows for the use of money loaned. The form of the transaction is not material. No device intended to disguise the real character of the transaction can avail to defeat the statute. Calling the transaction a sale of accounts does not alter the fact that the transaction is merely an advancement of money, to be repaid by the borrower with a rate of interest greater than that allowed by law.

Following this, the court of course cut down the trust company's charges for making the loan. The importance of the decision is not that it prohibits in any way the lending of money on book accounts; it could hardly do that, but it puts a decided crimp in the business by depriving it of most of its profit. I have reason to believe that a constantly increasing number of business people now use this method of raising ready money, so that the matter is one to be taken into account. The only way to get around the decision is to actually buy the accounts, which for various reasons the lending companies do not want to do.

I have made some study of the trade acceptances which are a part of the federal reserve act, and believe that in a very short time they will entirely displace the scheme of borrowing money on accounts receivable. A federal trade acceptance is little more than I O U. It is a written acknowledgment by the buyer of money owing for goods sold and delivered. A, a wholesaler or a manufacturer, sells $300 worth of goods to B, a retailer, to be paid for on regular terms. If A is accustomed to borrow on his accounts receivable, he will take his bill against B, with other similar accounts, to a lending company and borrow a certain percentage of its face value. If he uses the federal trade acceptance plan he will merely ask B to sign a paper acknowledging owing A so much money and agreeing to pay it at a certain date. A takes this to his bank and discounts it as if it were a note, and thus gets his ready money without the enormous interest rates that all of the private companies charge. The bank that discounts trade acceptances can rediscount them with a federal reserve bank, and thus there is a steady flow of ready money all the time.

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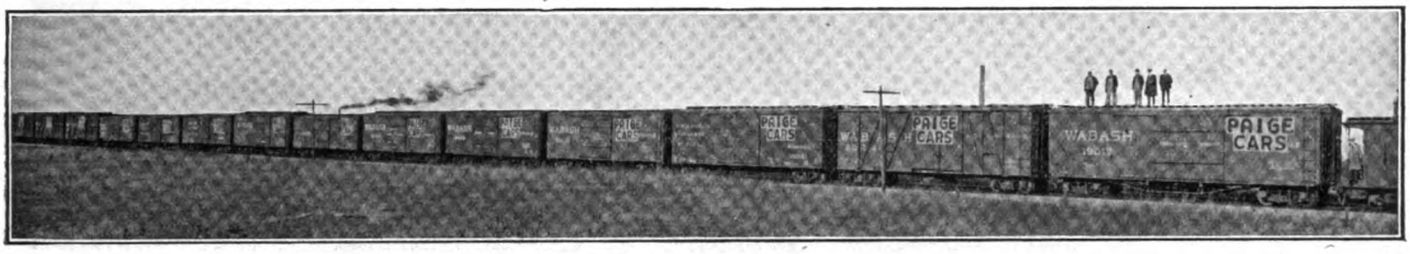


The Paige-Detroit Motor Car Company of Detroit Reports a Thriving Business, the View Above Being of a Train Load Shipment on the Way to Milwaukee, Wis., Recently, and Only One of Several Made in the Past Month.

HAPPENINGS AMONG THE CAR AND PARTS MAKERS.

What Several of the Leading Manufacturers in the Motor Vehicle Industry and Allied Lines Are Doing or Have Under Consideration

The Kellogg Manufacturing Company, Rochester, N. Y., makers of Kellogg engine driven tire pumps, has let contracts for a new building 100 by 50 feet, three stories high. This was made necessary on account of the increased business during the past year. The plans also provide for more office room and complete new offices on the top floor of one of the present buildings, and also for a new heating and power plant.

The Advance Felt Specialty and Cutting Company, Chicago, Ill., has moved into their new quarters at 318-322 South Jefferson street. This is the second move for the company within the last 18 months, due entirely to the rapid growth of the business. The new building is the "daylight" type, two stories, with full concrete basement, brick construction, with sprinkler system, equipped throughout with specially designed machinery for the cutting, stripping and punching of felt cloth, rubber and analogous materials. The company specializes in the manufacture of felt parts for automobiles, motors, transmissions.

The Chandler Motor Car Company, Cleveland, O., announces that it has purchased a large piece of property on East 131st street and on this property will, next spring, erect a building to be devoted exclusively to the handling of export shipments and the installation of special foreign equipment. The company is now constructing a building 60 feet wide, 500 feet long and four stories high. This big extension of the Chandler factory will make the company's plant one of the largest in the industry.

The Elgin Motor Car Corporation of Chicago, Ill., has been forced to increase the floor space more than 500 per cent. In the main assembling building, which has been completed, there are no posts or pillars. A new paint shop and testing laboratories also have been completed.

The Bour-Davis Motor Car Company of Detroit has removed its offices, which were located at 501 Fisher Arcade, and its manufacturing departments, which were located at three different factories in Detroit, to the new plant at West Fort and 23rd streets. The new plant is four stories in height and 100 by 130 feet, giving 52,000 square feet of floor space for the four floors. The factory is modern in every way. The offices of the company are located at the front of the second floor. The first floor is the stock room and contains wash racks and stands. The rear of the second floor will be used for final testing, the third floor for assembling and the fourth floor for painting and finishing.

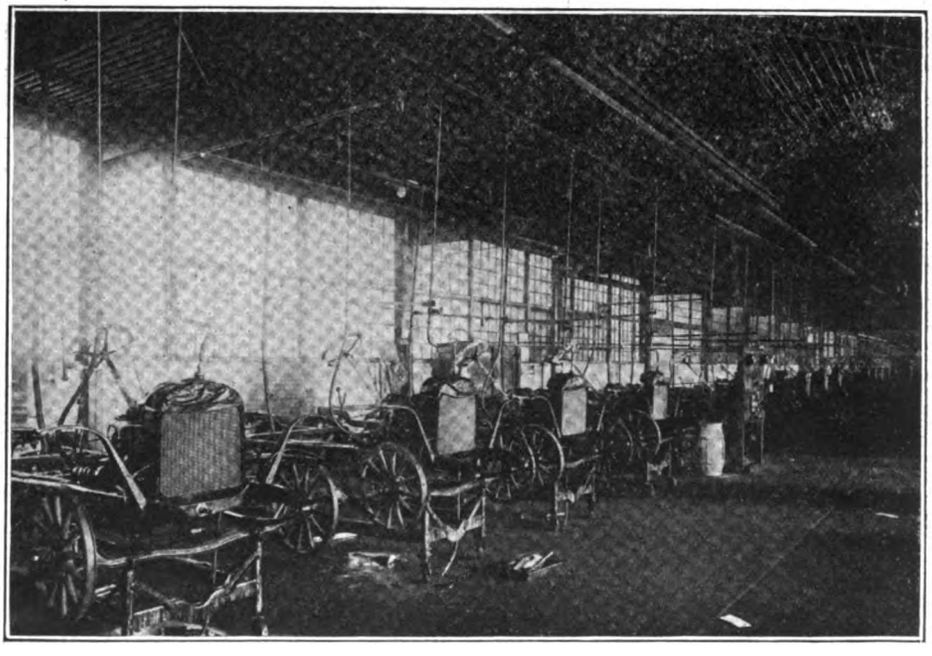
The American Motor Truck Company, Hartford, Conn., has offered to the market their new 1917 model two-ton truck. It is equipped with a Wisconsin motor of 36 horse power (A. L. A. M. rating) and embodies many ideas, new to motor truckdom, originated by A. D. Crossley, chief engineer of the company. The truck equipment includes the latest Bosch magneto-generator. N. F. Wilson is president of the company.

The Brown Company of Syracuse, N. Y., announces that the new heat treating department has been completed. Four oil burning furnaces of the very latest design have been installed, they having a capacity of 16 large pots per furnace, or 12 to 1600 bolts per heat, each furnace. Three heats every 24 hours can be successfully run, or 3600 to 4800 pieces for each furnace in a complete day. This addition was made necessary on account of the increased demand for spring shackle, grease and oil bolts, hardened and ground automobile parts and screw machine products.

The Dort Motor Car Company of Flint, Mich., has delegated the New York territory to Mr. C. T. Silver, who is known as the largest retail merchandiser of automobiles in the country. Mr. Silver was Overland distributor for that territory until the Overland company put a branch there.

The Silvex Company, 171 Madison avenue, New York City, has moved to 119 West Fourth street, South Bethlehem, Penn.

The Auto Light Control Company of Grand Rapids, Mich., has purchased the Grand Rapids Dimmer Company, which patented and manufactured the Butterfly automobile dimmer. This device controls the headlights and is worked with the foot from the dash of the car.



An After Working Hours View of One of the Testing Rooms in the Inter-State Motor Company Plant at Muncie, Ind. Showing a Battery of Nearly Complete Chassis Undergoing the "Monkey Test."

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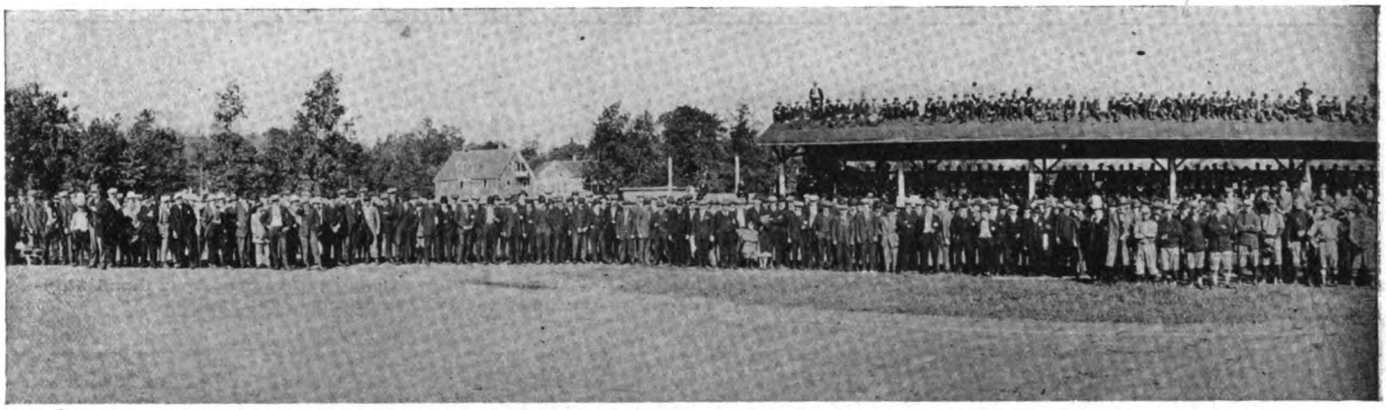
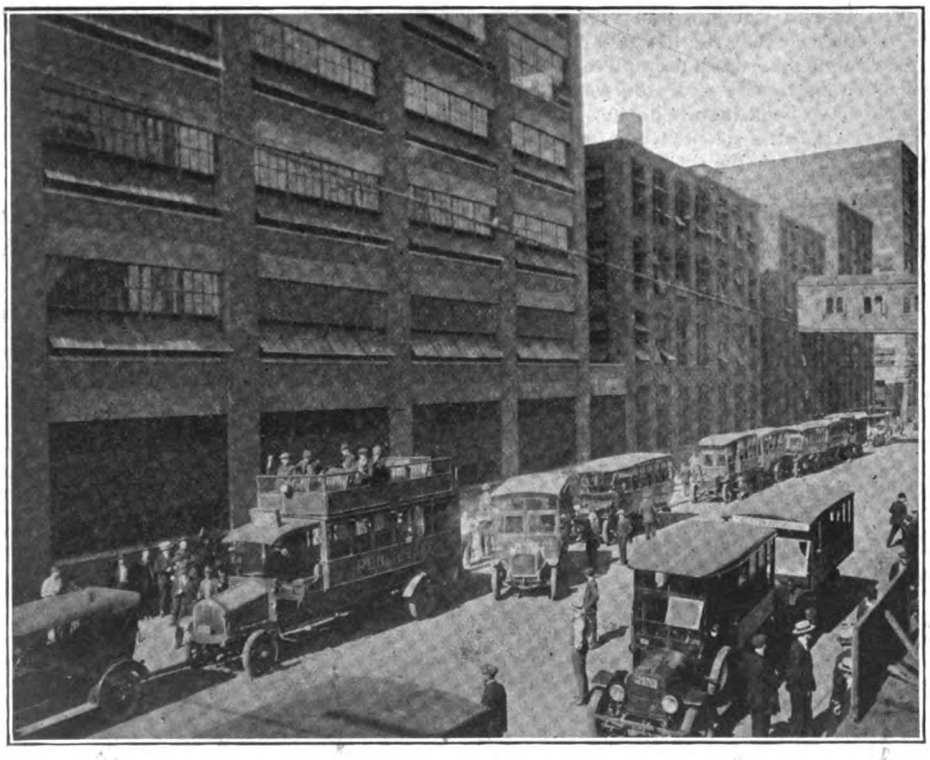


At the New Departure Manufacturing Company's Barbecue 2700 Employees Consumed 80 Spring Lambs, 9000 Ears of Corn, 30 Bushels of Potatoes, 2000 Cans of Corn and Pile Upon Pile of Old Fashioned New England Pumpkin Pie, and Still—

The New Departure Manufacturing Company, Bristol, Conn., recently held a record breaking barbecue, at which 2700 of the company's employees sat down to an old fashioned barbecue dinner of grilled lamb and all the "fixin's." Eighty spring lambs were held by skewers over a trench 328 feet long, filled with burning charcoal. For six hours the carcases were grilled in this manner and then served hot to the men at tables set up in the grove. Nine thousand ears of corn, the product of a five-acre lot, were not enough to feed the New Departure appetite, and so 2000 cans of corn had to be levied upon. Thirty bushels of potatoes were boiled on the grounds, while the old fashioned New England pumpkin pie required the services of practically all the bakers in the immediate neighborhood of Bristol. Beverages (unnamed) were kept cool in a miniature ice house erected on the grounds for the purpose. The barbecue, which was followed by athletic sports, was carried forward on schedule time by a committee of the New Departure Mutual Relief Association. The company furnished everything for the day, President DeWitt Page taking a large part in laying out the programme. The barbecue served as a welcome relief from the high tension under which the employees have been working, due to the increased demand in the past few months for New Departure ball bearings.

The Hyatt Roller Bearing Company, Harrison, N. J., has adapted large motor 'buses and automobile carryalls to carry its employees from the bearings factory to their homes, as is shown in an accompanying illustration. The problem of rush-hour transportation has been a pressing one, especially since the growth of cities has resulted in the concentration of large manufacturing plants. Twice each day, when the working shifts of the Hyatt company change, the 'buses and carryalls line up on either side of Middlesex street, adjoining the factories, to receive their loads. Each car travels over a specified route, either taking all the employees within a short distance of their homes or enabling them to reach advantageous transfer points. Recent additions to the Hyatt factories have brought the working force up to 4700.



MOTOR 'BUSES FOR HYATT WORKERS.

Twice a Day Scores of Motor 'Buses and Automobile Carryalls Line Up Before the Hyatt Roller Bearing Company's Plant at Harrison, N. J., to Transport the Hyatt Workmen and Women to Their Homes More Rapidly Than Could the Street Cars. There Are Now 4700 Employees in the Hyatt Factories Since Recent Enlargements to the Plant.

The Twin-City Four Wheel Drive Company, St. Paul, Minn., has begun the erection of a two-story addition, 120 by 175 feet, to the factory. The structure is expected to be completed in 40 days.

The Apperson Brothers Automobile Company has moved its machine shops into a new building which has been in construction for several months. The structure is the third large addition to the plant that has been built in two years and has 90,000 square feet of floor space, offering double the manufacturing facilities of the old.

Millspaugh & Irish, Indianapolis, car body manufacturers, have moved their plant to a new factory. This location is five times larger than the old. The company recently designed and built the racing bodies now being used by the Premier Motor Car Company of Indianapolis.

The Mohawk Rubber Company is rushing the work on the $100,000 addition to the factory. The new building consists of a three-story annex to the building recently completed and an additional story on an old building. It will be used for the manufacture of Mohawk "Quality" tires, including the new ribbed tread. The company also opened a Kansas City branch in charge of W. J. Smith, who is manager. He was formerly at Akron.

The Bower Roller Bearing Company, Detroit, Mich., has declared its third quarterly cash dividend of 15 per cent., making 45 per cent. in cash dividends. In addition to this the directors have recommended that a stock dividend of 100 per cent. be declared by the stockholders of the company at their annual meeting in January, 1917. The company is making extensive increases in equipment and production.

The McFarlan Motor Corporation, Connersville, Ind., has been incorporated for

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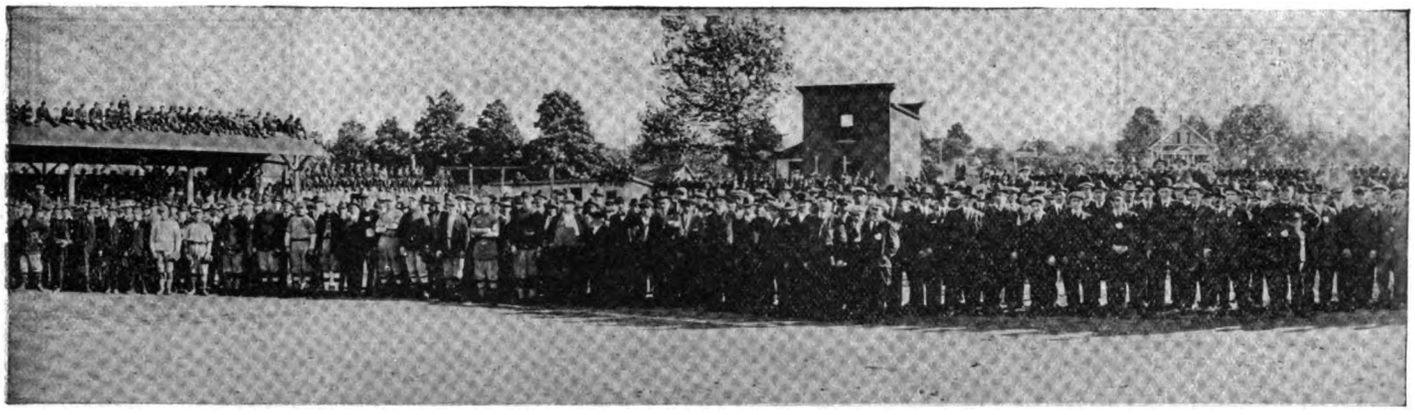


Had Room Enough for Gallons and Gallons of Beverages, and Energy Enough to Engage in Strenuous Athletic Sports Immediately After, and the Next Day to Resume the Production of New Departure Ball Bearings.

$3,000,000. The corporation will take over the stock of the McFarlan Motor Company and will increase the production of the McFarlan Six and provide facilities for the manufacture of certain parts now purchased elsewhere.

Massnick-Phipps Manufacturing Company, Detroit, Mich., has changed its name to Massnick Manufacturing Company. This does not in any way change the stock, ownership or control and the same management conducting the business of the old company during the past year continues as formerly.

The Reynolds-Hoffman Company, Detroit, Mich., will act as selling agents for a high grade line of automobile supplies and will introduce a new feature in winter top construction. These tops are designed to fit Fords and many other makes of cars. Mr. Reynolds has been actively connected for a number of years with the automobile industry in Detroit, while Mr. Hoffman was formerly in charge of the accessory store of the Puritan Machine Company.

The Hayes Wheel Company, Anderson, Ind., built in one day 1000 sets of Ford wheels, which were produced by the regular force of 300 men. A night shift of 300 employees is to be added so that the required capacity of 2000 sets of Ford wheels daily may be reached.

The Robbins Lumber Company, Spokane, Wash., is planning a four-story addition to its plant at 1218 Railroad avenue, where it manufactures bodies for automobiles. The addition will be 16 by 30 feet, of concrete and brick.

The Edward G. Budd Manufacturing Company, Philadelphia, Penn., maker of steel automobile bodies, has awarded a contract for the electrical equipment for its recent plant additions at an estimated cost of $20,000.

The Ford-Davis Manufacturing Company, St. Louis, has selected 2642 Locust street as the location for the new factory and will manufacture the Go-Saver piston rings, of which Jack Ford and T. D. Davis, the active members of the firm, are inventors.

The Goodyear Tire and Rubber Company, Akron, O., is employing 1250 men in the erection of its new buildings, which will make more room for the office force, as well as the factory workers. Within a year the company expects to employ 20,000 men making Goodyear products.

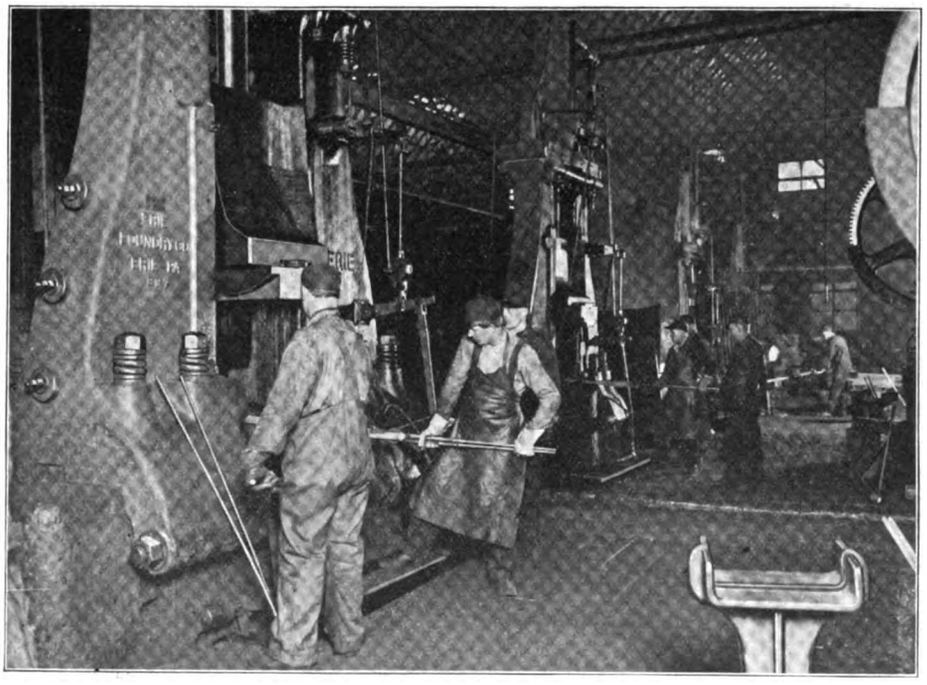
The Kelsey Wheel Company, Detroit, will increase the manufacturing space 50 per cent. by erecting two additions, each 140 by 600 feet. The company employs 2000 men and the number will be increased to 3000.

The Au-To Compressor Company, Wilmington, O., has added the following items to its accessory line: Bumpers, tire holders, jacks, steering wheels, cut-out outfits and valves, valve tools and brake shoes. The company's products hereafter will be designated by the trade mark "Oro."

The Keystone Rubber and Tire Company, Inc., of Penn, Pa., manufacturers of the Keystone puncture proof tire which carries a guaranty of 20,000 miles, have just issued a booklet describing the new product. It is claimed that the outer shoe eliminates the possibility of puncturing the inner rubber shoe and that no glass, stone, cactus, thistle or thorn, or any sharp object, can get through the armor of the outer shoe, which is made up of numerous blocks assembled to form an outer casing without detracting from the flexibility of the shoe.

The Firestone Tire and Rubber Company of Akron, O., has issued a beautifully printed and illustrated book, which gives a wonderfully accurate illuminated description of "America's Largest Exclusive Tire Plant," as it is styled in the frontispiece, and also shows everyone in the organization, from H. S. Firestone down to the office boys. It is the most complete contribution to the literature of the trade that has yet been published.

Being extra large in size the many illustrations are exceptionally clear and full of detail, particularly the large centre piece showing all the Firestone factory employees gathered in front of the plant. The book also gives a running illustrated story of how the Up River Para rubber is turned into Firestone tires, through each process, and the machinery that works it are shown in operation in the most graphic style.



HAMMERING OUT JEFFERY PARTS.

A Section of the Nash Motors Company Forge Shop, Kenosha, Wis. Twenty-Seven of These Huge Hammers Are Kept Busy Beating Out Forged Parts for Jeffery Motor Cars and Trucks. The Nash Forge Shop Is One of the Most Complete and Up-to-Date in the Automobile Industry.

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Securities and General Materials Markets.

	Sept. 14 Bid	Sept. 14 Asked	Oct. 5 Bid	Oct. 5 Asked
Ajax Rubber Company	62½	64	64	65
J. I. Case T. M. Co., pfd	83½	84½	83	86
Chalmers Motor Co., com	145	160	145	155
Chalmers Motor Co., pfd	95	98	95	99
Chandler Motor Car Co	108	109	105	106
Chevrolet Motor Co	190	193	198	201
Fisher Body Corp	..	..	40½	42
Fisk Rubber Co., com	99	106	97	106
Fisk Rubber Co., 1st pfd	107	116	110	117
Fisk Rubber Co., 2nd pfd	100	110	100	110
Firestone Tire and Rubber Co., com.	990	1025	1110	1150
Firestone Tire and Rubber Co., pfd.	110	112	110	112
General Motors Co., com	560	599⅞	720	759
General Motors Co., pfd	125½	126½	126½	127
B. F. Goodrich Co., com	72	72¼	74¼	75¼
B. F. Goodrich Co., pfd	113⅛	113⅞	113½	114
Goodyear Tire and Rubber Co., com.	247	252	295	300
Goodyear Tire and Rubber Co., pfd.	107¼	108	107¾	107½
Grant Motor Car Corp	7	8	9	11
Hupp Motor Car Corp., com	6	6½	5½	6½
Hupp Motor Car Corp., pfd	80	100	..	95
International Motor Co., com	6	10	10	..
International Motor Co., pfd	15	20	18	21
Kelly-Springfield Tire Co., com.	83¼	83¾	81½	81¾
Kelly-Springfield Tire Co., 1st pfd.	99	100	98	100
Lee Rubber and Tire Corp	47½	48	45¾	46
Maxwell Motor Co., com	81⅝	..	93	93½
Maxwell Motor Co., 1st pfd	83¼	83¾	87¾	88
Maxwell Motor Co., 2nd pfd	52½	54	57	58
Miller Rubber Co., com	223	237	250	265
Miller Rubber Co., pfd	104	106	104	106
Packard Motor Co., com	165	175	175	185
Packard Motor Co., pfd	..	100	97	102
Paige-Detroit Motor Car Co	53	56	33½	34½
Peerless Truck and Motor Corp	23½	24½	24	25½
Portage Rubber Co., com	152	156	170	180
Portage Rubber Co., pfd	150	155	170	180
Regal Motor Car Co., pfd	20	25	17	22
Reo Motor Truck Co	44	45	45¼	45¾
Reo Motor Car Co	44	45	..	..
Saxon Motor Car Corp	72	75	79¼	80¼
Springfield Body Corp., com	..	..	96	100
Springfield Body Corp., pfd	..	..	125	135
Standard Motor Construction Co	6	7	6½	7
Stewart Warner Speed Corp., com.	114	115	112	114
Stewart Warner Speed Corp., pfd.	..	..	..	..
Studebaker Corp., com	123⅞	124½	132½	132½
Studebaker Corp., pfd	109	110	109½	111
Swinehart Tire and Rubber Co	92	95	90	96
United Motors Corp	61⅜	61⅞	66	66¼
U. S. Rubber Co., com	58	58¼	61¼	66¾
U. S. Rubber Co., pfd	111¼	112	113¾	113⅞
White Motor Co	53	54	54¾	55¼
Willys-Overland Co., com	57⅞	48	46	46¼
Willys-Overland Co., pfd	103¼	105	103⅛	103¾

DOMESTIC CRUDE OIL PRICES.

The prices of crude petroleum at the wells during the middle of the month of October were:

Pennsylvania dark	$2.50	Corsicana heavy	$.40
Mercer black	200	Electra	.95
Cabell	2.00	Henrietta	1.15
New Castle	2.00	Caddo, La., 38°	.
Corning	2.00	Caddo, La., heavy	.65
Wooster	1.65	Plymouth	1.08
North Lima	1.42	California oil	.78
South Lima	1.43	Healdton	.40
Indiana	1.28	Moran	.95
Princeton	1.47	Strawn	.95
Somerset 32°	1.85	Thrall	.95
Ragland	.85	De Soto	.80
Illinois above 30°	1.47	Crichton	.55
Kan. & Okla	.90	Canada	1
Corsicana light	.90		

Naphtha.

	10-gal. drums Under 100 cases	10-gal. drums 100 cases and over
Benzine, 59-62°	33¼	32¾
73 a 76°	41	40½
Stove	33½	33
Auto, 68-72°	37	36½

	In cans and cases Under 100	100-199	200-299
Benzine, 59-62°	28½	28¼	28
73 a 76°	36¼	36	35¼
Stove	28¾	28½	28
Auto, 68-72°	32¼	32	31¾

NEW YORK CITY PRICES.

New York City prices for petroleum and its products were:

Petroleum.

Crude, barrels, per gallon ..... 15 a 18
Refined barrels 12
Fuel, merchantable, tanks ..... 4½ a 5¼

Tank Wagon Delivery.

Fuel, 31 degrees ..... 9 Fuel, 34 degrees 9¼

Motor Gasoline (Steel Barrels).

Garages ..... 22 V., M. & P., deod., in steel 22
Consumers ..... 24 V. M., & P., deod, in wood 24

Gasoline.

Gas machine, steel ..... 37 68-70 degrees, steel 28
73-76 degrees, steel ..... 31 68-70 degrees, wood 31
73-76 degrees, wood 34

GENERAL MARKET PRICES.

	Sept. 14	Oct. 11
Antimony	11¼	11⅛
Iron, foundry, S., ton	14.50	14.50
Iron, foundry, N., ton	19.50	19.00
Iron, Bessemer, ton	20.00	20.00
Steel, Bessemer, ton	45.00	45.00
Beams and chan., 100 lbs	2.769	2.869
Copper, elec., 100 lbs	28.00	28.50
Copper, lake, 100 lbs	28.00	28.50
Lead, 100 lbs	6.80	7.05
Tin, 100 lbs	38.37½	39.87½
Petroleum, Penn., cr., bbl	2.30	2.50
Petroleum, Kan., cr., bbl	90	90
Linseed oil, raw	69	82
Rapeseed oil, refined	90	90
Lard oil, prime	1.00	1.08
Fish oil, Menhaden, br	58	58
Sulphuric acid, 60	3.00	3.00
Cottonseed oil, bbl	10.15	11.40
Silk, raw, Italy	6.50	6.50
Silk, raw, Japan	5.50	5.57½
Rubber, fine, up-river, Para	72	73
Tire, scrap	5⅜	6¼
Steel, open hearth, ton	45.00	45.00

FOREIGN TRADE OPPORTUNITIES.

(Address Bureau of Foreign and Domestic Commerce, Washington, D. C., Giving Number, Which Will Forward Correspondence, Unless Otherwise Stated.)

Automobiles, Mining Machinery and Belting. No. 22,406—The commercial agent of the bureau in New York City reports that a business man from Spain is now in the United States for the purpose of establishing commercial relations with American manufacturers and exporters of automobiles, mining machinery and leather belting. The man desires to represent on a commission basis. References.

Tractors. No. 22,427—A company in China writes an American consular officer that it is desirous of purchasing tractors for agricultural purposes.

Textiles, Automobile Accessories, Etc. No. 22,449—A firm in the United States writes the bureau that a Cuban merchant who is now in the United States wishes to secure exclusive agencies for the sale of the following commodities in Cuba: Ostrich feathers, cotton and print goods, underwear, shoes, rubber goods, barrel staves, toys of all kinds, magnets and motors, and electrical and automobile accessories.

Motor Cars. No. 22,622—The commercial attache of the Department of Commerce in the Netherlands writes that a manufacturers' agent in that country wishes to represent an American manufacturer of a moderate priced motor car.

Automobiles. No. 22,640—A firm in the United States writes the bureau that its agent in Spain wishes to secure the agency for an automobile retailing from $700 to $900. His organization covers the whole of Spain. He wishes to buy a sample machine at once.

Automobile Agency. No. 22,643—A man in Cuba writes the bureau that he contemplates entering into the automobile business and desires to be placed in touch with manufacturers of motor cars not already represented in that island. References.

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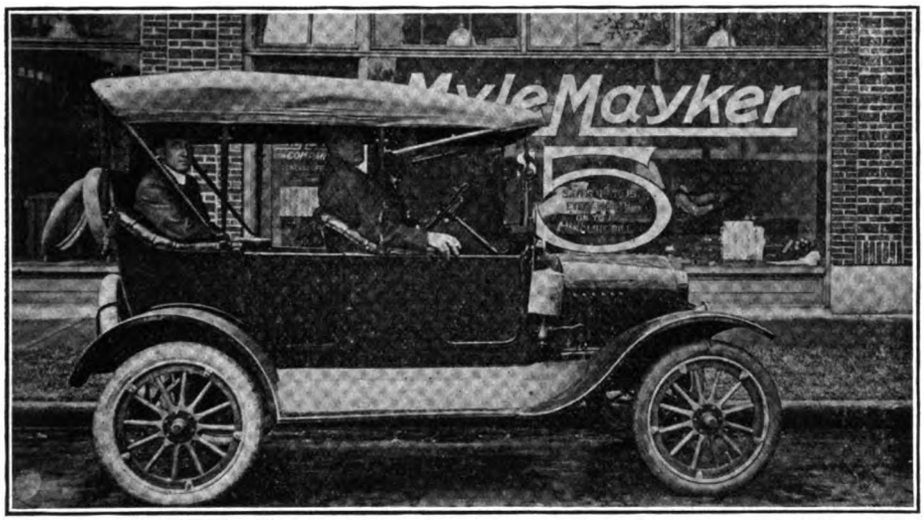
A. A. A. Tests Out Myle-Maker.

Fuel Economizer Shows 18.22 Per Cent. Increase in Mileage on Stock Ford Car.

An exceedingly thorough test of the Myle-Maker, the new fuel economizing device produced by the Myle-Maker Company of Chicago, was recently staged in that city by the Automobile Association of America and the Myle-Maker easily maintained its reputation, even though the test was extraordinarily rigid.



The Ford Car Used in the Myle-Maker Test, with F. E. Edwards of the A. A. A. in the Front Seat and Leroy Hillman of the Chicago Automobile Club in the Rear.

The device was tried out on a 1917 Ford car that had been run but 278 miles and had been picked at random. The car was standard in every respect. The Stewart speedometer which was to register the mileage had been thoroughly overhauled by the makers and put into first class operating condition. The Holley carburetor was likewise overhauled. Knowing that the car was to be put to a gruelling test to show mileage the carburetor expert adjusted the instrument to produce a far thinner mixture than used ordinarily by the driver of a Ford.

The car was first tried without the Myle-Maker and showed a mileage of 22½ miles per gallon. In making this test the motor was run until it died out through exhaustion of the gasoline in the standard tank. A measured U. S. gallon of gasoline was then poured into a special tank, and the car started with the aforementioned result.

One hour later the same car, which weighed complete with passenger load 2267 pounds, was equipped with the Myle-Maker and sent from the same starting point, over the same course and under the same climatic conditions. It required only one minute and 20 seconds to make the attachment. Before the start the needle valve was turned down still further, three-eighths of a turn, making the mixture even finer than in the first test.

The A. A. A. technical expert, F. F. Edwards, watched the driver to see that he maintained the same average speed as in the first trial. The result was that the Myle-Maker easily proved the claims made for its manufacturers, it showing a mileage record of 26.6 to the gallon, an increase of 18.22 per cent. over the mileage made by the car without the Myle-Maker attached.

A test was made of the comparative acceleration of the car without and with the Myle-Maker attached. Without the Myle-Maker the speed was increased from 7½ miles to 30 in 24 seconds. With the Myle-Maker the same increase was made in 22 seconds.

New Hawthorne Windshield Light.

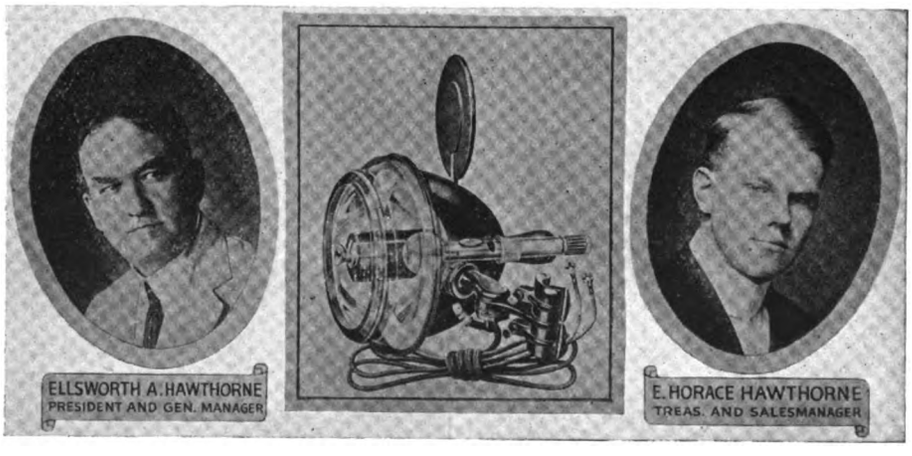
Detailed Description of New Old Sol Nitrojector Which Has Remarkable Selling Features.

In view of the difficulties that motorists are experiencing in all parts of the country in trying to conform to the new and in some cases severe anti-glare laws, the announcement of a new windshield light by the Hawthorne Manufacturing Company, Bridgeport, Conn., to retail at $10 complete, is of special interest at this time.

The Old Sol Nitrojector No. 100 is designed not only to carry a single beam of light, in any direction, for a distance that will easily make possible the reading of a sign 1000 feet away, but is so constructed that none of the stringent light laws of the various states will be violated. This new device has three patented features, which give absolute control of the light. The car driver cannot only "spot" objects on any side of him, but he also can focus his light while doing so, to bring the spot to a sharply defined circle. Also, he can fix the focus to a fairly wide mark to take in curves, locate sign posts, or pick out the road in passing other cars.

The main feature of the lamp is the patented double cylindrical shutter, the purpose of which is to shield the rays of the light and so contain them that they can be directed in a straight line away from the eyes of anyone looking directly into the lamp itself. The shutter is manipulated by a thumb screw. Turning the screw causes the shutter to recede, confining the light until only a thin ribbon of light comes from the Nitrojector to spread out, at a distance of 500 feet, to about four feet in diameter. If a wider circle is wanted the cylinder is moved forward until the light from the bulb hits all of the reflector placed at the back of the lamp. This is a spherical reflector, not a parabolic, that throws the light forward. The tendency to spread is corrected by another reflector immediately back of the opening of the searchlight, intensified by a parabolic side reflector, and so given its last impetus from the spherical reflector to the lens.

This lamp is supplied with nitrogen gas filled bulbs and may be had for any voltage. Also supplied with it is a finely made diminishing mirror, an added safety device which in one state, at least, is required by law. The lamp is made of pressed steel finely finished in black enamel with three baked-on coats and is equipped with a patented adjustable universal joint. Included, also, are six feet of duplex cable and suitable connection terminals.



The Old Sol Nitrojector No. 100 and the President and General Manager and the Treasurer and Sales Manager of the Hawthorne Mfg. Co.

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THE FIRST THREE-STATES SHOW.

Rhode Island and Massachusetts Dealers Hold Initial Exhibition of Motor Cars.

Charles A. Clark, Manager of Fall River Branch of Kenworthy & Clark, Studebaker Dealer.

NOT to be outdone by the other dealers throughout the country who have grasped the opportunity of showing the new models of their cars to thousands of people at state fairs, the automobile dealers of Providence, R. I., gave an exhibition at the Three-States Fair at Crescent Park during the week of Oct. 9-13. About 25 different models were shown, including pleasure cars, delivery cars and trucks.

The Three-States Fair was inaugurated this year and it is intended by the promoters to hold it annually. On account of this being the first fair there was some doubt in the minds of the Providence auto dealers about participating, but at the close of the week these doubts had been dismissed, as a large number of prospects were secured by practically every exhibitor. There were only nine exhibitors in the show, which was held in a large dining hall, but Manager A. Warner Hurlbut stated that he was pleased with this showing for a start and that next year's display would be on a more elaborate scale.

The fair drew its attendance from three large cities, Providence, Fall River and Pawtucket, and smaller cities in an area populated by nearly 600,000 people.

Walter R. Richards, Distributor of the Mitchell Line.

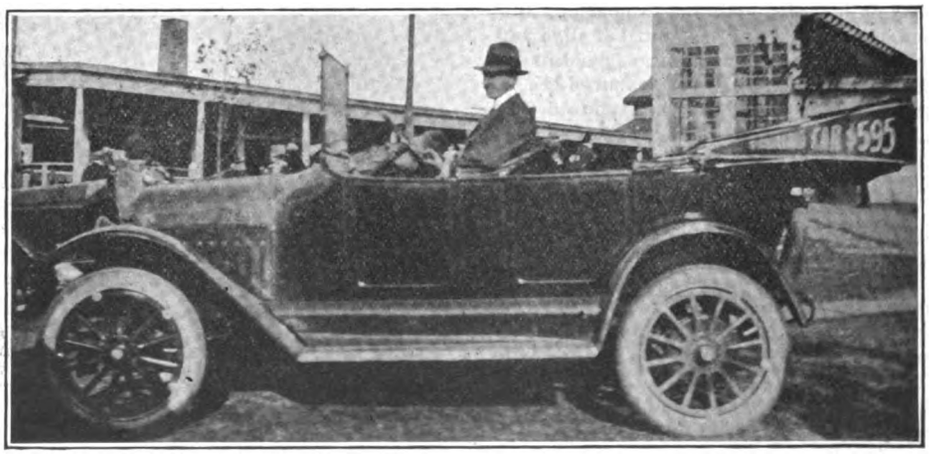
On Governor's Day between 3000 and 3500 possible prospects attended. With this crowd on hand the possibilities of getting in touch with buyers rested solely with the salesmen, and it can be truthfully said that they were on their job every minute of the time.

The following Providence dealers had cars on display: Knight Automobile Company, National motor cars and White trucks; Kenworthy-Clark Company, Studebaker line; Maxwell Motor Sales Corporation, Maxwells; Paige Motor Company of Rhode Island, Paige cars; Pugh Bros. Company, Willys-Overland line; Vim Truck Sales Company, Vim delivery cars; Adelaide Garage and Supply Co., Enger cars; John O'Donnell, Republic trucks; Walter R. Richards, Mitchell cars.

A. Warner Hurlbut, Manager of the Three-States Fair Automobile Show.

Harry D. Gilbert, Manager of the Knight Automobile Co., White and National Cars.

C. D. Shaw, Represented the Paige Motor Company of Rhode Island.



Gilbert Williams of the Maxwell Motor Sales Corporation in a 1917 Maxwell.

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ACTIVITIES OF PROMINENT MEN IN THE INDUSTRY.

News Concerning Well Known Members of the Motor Vehicle and Allied Industries.

Paul W. Runyan, formerly assistant to the sales and advertising manager of the Robbins & Myers Company, Springfield, O., has been placed in charge of publicity for the Westcott Motor Car Company of the same city. He resigned from the Robbins company last December and since then had engaged in the retail automobile business in Springfield.

Guy Hutchinson has joined the forces of the Willys-Overland company as branch manager in New York City. He was formerly sales manager of the Corbin Motor Vehicle Company and later sales manager and treasurer of the firm of Hart & Hutchinson.

George M. Graham is now with the Willys-Overland Company of Toledo and will be assigned to research and publicity work in connection with the advertising department of the company. For 15 years he was sports editor of the North American and for 10 years its automobile editor.

H. S. Farish has been appointed assistant to the president and general manager and also purchasing agent of the Abbott Corporation.

T. J. Turk, chief engineer of the Inter-State Motor Company at Muncie, Ind., has been appointed assistant general manager of the company. He will also retain charge of the engineering department. Mr. Turk has been connected with the company since 1914. He is a graduate of the University of Michigan and has been closely identified with the automobile industry in many different capacities.

H. O. Bernhart and Peter Hacquebart are now with the Harroun Motors Corporation. Mr. Bernhart has been appointed production expert. He was formerly factory manager of the Pierce Arrow Company in Buffalo and will serve the Harroun interests in a similar capacity. Mr. Hacquebart has been appointed construction engineer. He will be in charge of construction work at the Harroun corporation's manufacturing headquarters at Wayne. He comes from the Maxwell Motor Company.

John J. Plath has resigned the sales management of the Maxwell Motor Corpany to assume the position of director of distribution of the Harroun Motor Corporation. Mr. Plath's rise in the automobile world has been highly spectacular, as he made the leap from the ranks to sales management with but one year of experience in the automobile field.

W. H. Alford has resigned as comptroller of the General Motor Corporation. He is now with the Nash Motor Car Company, Kenosha, Wis., in a similar position.

J. C. Weston will remain with the U. S. Tire Company instead of going to the

Paul W. Runyan, Manager of Publicity for the Westcott Motor Car Company.

Mitchell Motors Company, Racine, Wis., as was announced recently, in the capacity of vice president in charge of sales. Mr. Weston will assume the newly created position of director of sales, thus abolishing the post of sales manager formerly held by him. O. S. Tweedy has become general branch sales manager, having direct charge of all branches.

D. K. Hall has been appointed director of service of the Pathfinder Company, Indianapolis, Ind. He was for 20 years head of the complaint department of E. C. Atkins & Co., saw manufacturers, Indianapolis.

Lee J. Eastman was elected president of the Philadelphia branch of the Packard Motor Car Company by the directors

T. J. Turk, Chief Engineer and Assistant General Manager of the Inter-State Motor Company.

Resignations, Promotions and Other Changes in Personnel Recently Announced.

at a recent meeting in Detroit, succeeding Edwin B. Jackson, who is now president of the New York branch. He was formerly manager of the branch.

A. Aprahamion has sailed for Africa, China and other points in the Far East, where he will represent several automobile and accessory companies, among which are: Mitchell Motors, Federal Tire, Cox Brass, New Departure, Standard Woven Fabric, Champion and Keyless Auto Lock.

Ben Rennard has been appointed special sales representative for the Ross Automobile Company, Detroit. He has been with the Locomobile, Chalmers and Chandler organizations.

James L. Zadek has taken charge of the testing and assembling departments of the Temple Manufacturing Company, 54th and 22nd streets. The company makes gasoline engines and machine tools. He was formerly superintendent of the police department shops, Chicago, Ill.

Nelson Johnson, tractor expert for the Emerson-Brantingham Company, Rockford, Ill., has sailed for Vladivostock, Russia. He intends to get business for delivery after the war. Mr. Johnson has spent several years in Spain, Argentina and Mexico selling tractors. He will remain in Russia for a year or more in a similar capacity.

J. B. Ryall has been appointed manager of the Poertner Motor Car Company's truck department, New York City. A few years ago he was prominent in automobile racing.

W. H. Gaulke has resigned from the A. B. and B. Specialty Company to join the Heil Company, Milwaukee, Wis., in charge of automobile gasoline tanks and specialties.

F. W. Warner at a recent meeting of the directors of the Oakland Motor Car Company of Pontiac, Mich., was elected president of the company to fill the vacancy created recently by the resignation of C. W. Nash. At the same meeting C. B. Voorhis was elected vice president and both he and Mr. Warner were elected to the directorate.

Ward H. Keller has been appointed manager of the retail sales stores of the Maxwell Motor Sales Corporation of Cleveland, O. He was formerly a zone supervisor and has been in the automobile industry since its early days.

John Tainsh, assistant sales manager of the Mitchell Motor Company, Racine, Wis., for the past three years, under Otis C. Friend, is now sales manager.

H. H. Grobe will open a direct factory branch which the Kelly-Springfield Tire Company of New York is to develop in Washington. He has been with Kelly-Springfield for the past five years.

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Smalley Daniels, president of the New Era Spring and Specialty Company, Detroit, who has for five years been manager of the sales department for the tire carrier of the W. W. Sly Manufacturing Company, Cleveland, has purchased this part of the Sly company's business, patents recently adjudicated, good will, equipment and stock. The New Era Spring and Specialty Company will remove the business to Detroit or Grand Rapids and combine their shock absorber and bumper plant and greatly increase the tire holder product. The main sales office of the New Era company will remain in Detroit.

John S. Wiese has been appointed Studebaker branch manager to succeed J. O. Hahn. With the appointment of Mr. Wiese it is announced that former branch headquarters in Cleveland will be removed to Buffalo. Mr. Wiese was manager of the Winton branch in Los Angeles.

J. K. Gewinner has severed his connection with the Johnson Gewinner Company, of which he has been president and general manager for the past four years. Mr. Gewinner is going into business for himself and will handle tires and accessories.

Kenneth Skinner has sold his interest in the Micro Piston Ring Company, New York City, and has resigned as secretary. He has gone into business as manufacturers' representative under the firm name Auto Appliance Company and is temporarily located at 1960 Broadway, where he represents the G. H. Dyer Company of Cambridge, Mass., also the Asbestos and Rubber Works.

A. A. Woodruff has been appointed assistant sales manager of the Simplex Automobile Company, with office at 60 Broadway, New York City. He will have charge of office routine and system and the spare and repair parts business. He will also remain manager of the body department.

B. M. Diver, expert body designer and engineer, has joined the Cole Motor Car Company of Indianapolis. He will also devote his personal attention to bodies which the Cole company is contemplating as part of its regular production.

R. W. Donahue has been appointed assistant sales manager of the Ross Automobile Company and will assist C. Arthur Benjamin, general sales manager. Mr. Donahue entered the automobile business with the E-M-F company in 1908, and after that was associated with the Oakland Motor Car Company of Pontiac as advertising manager. He resigned and traveled through the East and West for the Liberty Motor Car Company as special representative.

John L. Stanley has been appointed assistant sales manager of the Briscoe Motor Corporation, Jackson, Mich. Mr. Stanley was formerly with the Paige distributors at Kansas City and prior to that time was with the Mitchell and Jeffery companies as district sales manager.

A. T. Renfroe, for several years branch manager at Wichita of the Hart-Parr Company, has resigned on account of ill health. Mr. David Speiser, formerly with Emerson-Brantingham. is now the Hart-Parr branch manager.

E. C. Morse, Vice President of Chalmers Motor Co.

E. C. Morse has resigned as sales manager of the Hudson Motor Car Company to become vice president of the Chalmers company. He takes the position made vacant by the death of Paul Smith and will have direct charge of sales, service and advertising. In 1908 Mr. Morse was commercial manager for the E. R. Thomas Motor Company of Buffalo, which marketed the product of the Chalmers-Detroit Company. He joined the Hudson company in 1909.

Howard B. Ashley has been made manager of the zone sales department of Willys-Overland, Inc., St. Paul, Minn., having been promoted from the Overland Sales Company, Toledo, O.

Kirk Taylor, formerly assistant manager for the New Era Spring and Specialty Company, Detroit, is now sales and advertising manager of the Evapco Manufacturing Company, Detroit. W. O. Seeley, who formerly held the position, resigned to devote his time to the Thorson-Seeley company.

Kirk Taylor, Evapco Manufacturing Company.

Marion C. Bias has been appointed purchasing agent of the Mitchell Motors Company, Inc. He has been identified with the organization since 1909. He succeeds Guy Morgan, who has resigned.

George W. Hoyt, connected with the automobile business for the last 12 years, and associated with Ray Harroun as assistant in the engineering department of the Nordyke & Marmon company of Indianapolis, and later with the Maxwell Motor Company, Inc., has been made production and factory manager of the Bour-Davis Motor Car Company of Detroit.

J. H. Schaniel has joined the forces of the Wallace C. Hood Service Bureau of Detroit and has been appointed northwestern representative for the bureau covering the states of Minnesota, North and South Dakota, Montana, Oregon, Washington, Idaho and California. He was former sales manager of the Gerlinger Motor Car Company of Portland, Ore.

T. V. Buckwalter has been appointed chief engineer of the Timken Roller Bearing Company, Canton, O. He was formerly in the engineering department of the Pennsylvania Railroad Company, Altoona, Penn., in charge of the self-propelled vehicle research work in connection with the development of motor car practise.

Louis H. Bill has resigned as general manager of the Nash Motors Company, Kenosha, Wis., to retire to his large fruit ranch in California.

B. H. Pomeroy is now factory manager for the Michigan Motor Specialty Company, Detroit. He has had long experience in the industry, having been connected with the Mobile company and later with the Dayton Motor Car Company, Dayton Engineering Laboratories Company and Mead Engine Company.

E. J. Kilborn has resigned as Chicago manager for the Oakland Motor Company and is now general sales manager of the Liberty Motor Car Company, making his headquarters at the home office in Detroit. He is succeeded in the Chicago office of the Oakland company by James H. Ramsden, who has been a general branch house traveler for the company for several months.

William M. Tompkins has been appointed representative in Philadelphia, Penn., for the Ward Leonard Electric Company, Mount Vernon, N. Y. He has had considerable experience in the electrical field and makes his headquarters at 4813 Haverford avenue.

P. P. Willis has become vice president and manager of production for the Singleton-Hunting Company, Cleveland, O. Mr. Willis was for some time advertising manager for the Willys-Overland Company and during the past three years has handled the advertising of National, Auburn, Lexington-Howard and other automobile and accessory accounts.

J. H. Newark has been appointed advertising manager of the Chevrolet Motor Company, taking the position of John R. Eustis, who has resigned. Mr. Newark will be located at the general offices of the company in New York City.

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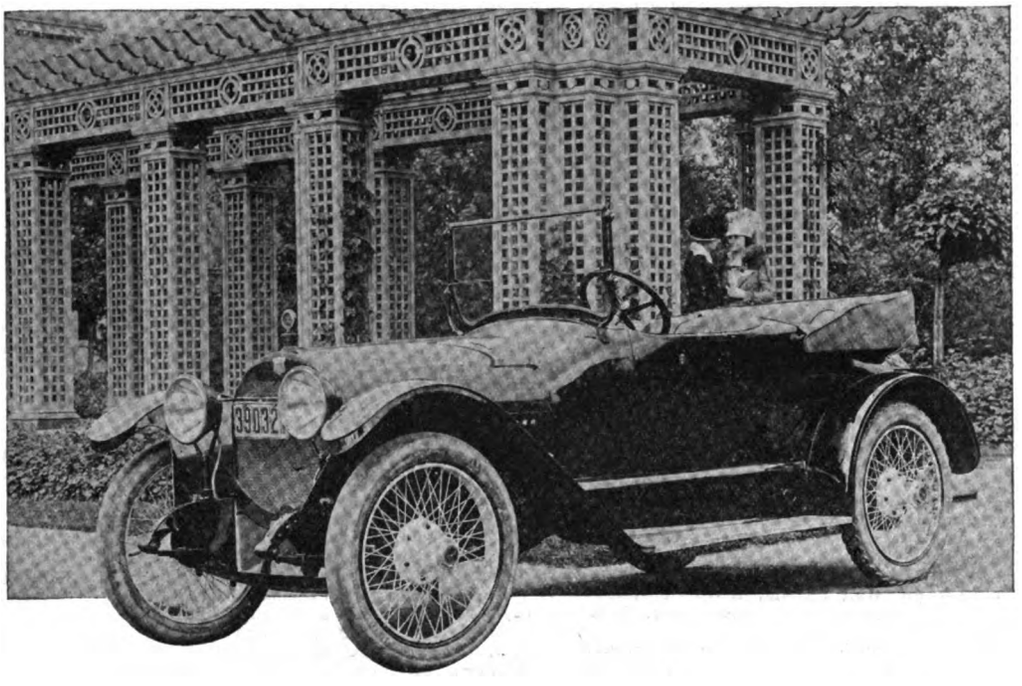
The Haynes Light Twelve Chassis for 1917.

The 1917 Haynes Roadster, Mounted on the Twelve-Cylinder Chassis; Manufactured by the Haynes Automobile Company, Kokomo, Ind.; Price, $2085—The Haynes Light Six Roadster for 1917 Is Priced at $1585. Complete Description in The Automobile Journal, Oct. 10, 1916.

Motor, V shaped, 12 cylinder.
Bore and Stroke, 2¾ by 5 inches.
Horsepower (S. A. E.), 36.3.
Piston Displacement, 356 inches.
Lubrication, pressure feed system.
Cooling, pump circulation.
Ignition, Delco two-unit installation.
Carburetor, located in V alley.
Fuel feed, vacuum system.
Starting and lighting, Leece-Neville.
Clutch, three-plate dry disc.
Gearset, three-speed selective.
Rear Axle, full floating, Haynes make.
Wheelbase, 121 inches.



NEW CONCERNS RECENTLY INCORPORATED.

Monthly Record of New Business Houses for which Charters Have Been Issued In the Various States and Classified According To Nature of Business.

Parts and Fittings Makers Incorporated.

Wilmington, Del.; Champion Spark Plug Company; $1,000,000.

Chicago, Ill.; Standard Motor Parts Company; $2500; Park Q. Wray, Estella B. Ray, Frederick C. Harbour.

East Moline, Ill.; National Auto Signal Company; $5000; J. B. Merwin, H. M. Orman, L. B. Orman.

Evansville, Ind.; Schlundt Motor Company; $25,000; Jabez Woolley, C. A. Reitz, A. J. Schlundt.

Louisville, Ky.; Leyman Motor Company; $10,000; Harry Leyman, Harry D. Compton, Clarence Longacre.

Detroit, Mich.; Detroit Truck Company; $50,000; to make units for Ford cars; Fred L. Paterson, James M. Hibbard, Robert M. Brownson.

Jackson, Mich.; S. and W. Detachable Body Company; $10,000; to make detachable bodies; F. C. Badgley, Israel Mendelson, John A. McAvoy.

St. Louis, Mo.; The Tevis Motor Company; $15,000; C. H. and L. G. Tevis, E. J. Mauntel.

Albany, N. Y.; The E. V. Stratton Motors Company; $51,000; E. Vincent Stratton, Guy D. Hills, John S. Pettit, Chauncy D. Hakes, Frederick Townsend, Ezra P. Mickel.

Brooklyn, N. Y.; Okay Motor Manufacturing Company, Inc.; $1000; Lee S. Woodruff, Ralph E. Bates, G. Kenneth Fischer.

Buffalo, N. Y.; Packard Buffalo Motor Company; $75,000; L. R. Davidson, E. C. Sutten, B. C. Day, L. M. Bass, W. M. Wilkins.

New York, N. Y.; Crow Motor Sales Company; $25,000; to manufacture parts, accessories; J. A. Jennings, C. Burgess, A. L. Goody.

New York, N. Y.; Gray Body Company; $500,000; to deal in automobile bodies.

New York, N. Y.; Longuemare Manufacturing Company; $1000; to manufacture carburetors and other automobile parts; M. L. Weiland, Arthur H. Slack, Henry Amerman.

New York, N. Y.; S. V. Sales Corporation; $600,000; to manufacture motors, engines, machinery and devices; F. Ducasse, E. G. Gates, E. L. Russell.

New York, N. Y.; U. S. Safety First Motor Signal Company; $75,000; to manufacture safety first motor signals and other novelties.

Cincinnati, O.; Anderson Steam Vulcanizer Company; $100,000; to manufacture steam vulcanizers; Edward D. Woodward, Newton M. Anderson, William D. Schwarting, Eugene Schmidt, James C. Wells.

Cleveland, O.; The Coate Motor Company; $40,000; S. A. Pfau, W. V. Fraunce, M. D. Coate, H. M. Coate and C. E. Sederland.

Cleveland, O.; Mathematical Wheel Company; $10,000; to manufacture wheels; Harry H. King, Victor C. Lynch, Elliad King, M. O. King, Mrs. M. O. King.

Cleveland, O.; Woodruff Motors Company; $25,000; W. R. Godfrey, D. P. Mills, P. S. Knight, L. Dreher, M. Marquard.

Dayton, O.; Dayton Steel Wheel Company; $50,000; to manufacture motor car wheels; George Walther, Jacob Walther, Katie Walther, W. A. Pierce, G. E. Nicholas.

Dayton, O.; Quartz Spark Plug Company; $25,000; to manufacture spark plugs; B. F. Weaver, Isaac Warner, I. L. Haure, George S. Lott.

Warren, O.; The Fahrney & Williams Motor Company; $10,000; F. D. Williams, Ira S. P. Fahrney, Sarah Williams, W. M. Kyser, S. C. Graber.

Washington C. H., O.; German Motor Company; $25,000; H. B. Dahl.

Dealers In Automobiles and Motor Trucks.

Pine Bluff, Ark.; The H. I. Holderness Company; $20,000; to engage in automobile business; H. L. Holderness, Fred E. Niven, Harvey Allen.

Los Angeles, Cal.; The Hubbard Auto Sales Company; $10,000; Watson D. Hubbard, Harry P. Hubbard, L. L. Barnes.

Wilmington, Del.; Harroun Motors Corporation; $10,000,000; to deal in autos, motors, tools, implements and generators; Hopkin Rogers.

Tallahasee, Fla.; J. R. Holland Automobile Company; $25,000; to deal in motor cars and machinery and to conduct a garage; J. R. Holland, J. W. Martin, Fred T. Field.

Chicago, Ill.; Midland Auto Company; $10,000; to deal in automobiles; Edgar B. Cahn, Harry Goodman, William Swissler.

Chicago, Ill.; Schreuder Automobile Company; $25,000; to deal in automobiles and accessories.

Indianapolis, Ind.; Olin Sales Company; $1000; to buy, sell and deal in motor cars; W. G. Olin, B. E. Eischer, G. A. Schilling.

Indianapolis, Ind.; Reagan Automobile Company; $35,000; to buy and sell motor cars; Grace W. Reagan, M. E. Reagan, J. F. Ohmansick.

Ft. Wayne, Ind.; The Anthony Auto Lifter Company; $10,000; to manufacture auto and other devices; C. O. Blee, W. O. Chaney, G. F. Seymour.

Fort Wayne, Ind.; Steinhart-Randall Auto Company; $12,000; to buy and sell motor cars; A. L. Randall, G. H. Grieger, E. W. Steinhart.

Abington, Mass.; The A E. M. Spiller Company; $50,000; Albert E. M. Spiller, Ava E. Spiller, Thomas E. Holmes.

Detroit, Mich.; Detroit Motor Sales Com-

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pany; $25,000; to deal in motor cars and accessories; William and Herman C. Speir, Paul Mayer, Leon Hommel, Ernst Wisroth.

Detroit, Mich.; Michigan Oldsmobile Company; $25,000; to deal in motor cars; Richard H. Collins, Frank J. Mullershoen, Wilbur H. Collins.

Detroit, Mich.; Walker-Saxe Motor Company; $18,000; to deal in motor cars; John S. Walker, Genard F. and Grace Saxe.

Grand Rapids, Mich.; Chandler Motor Sales Company; $25,000; to deal in motor cars; George W. Van Every, Fred H. Peck, Amos Gezon.

Grand Rapids, Mich.; The Western Michigan Paige Company; $10,000; J. B. Conger, Carroll L. Conger, Herbert A. Porter.

Lansing, Mich.; Wolverine Auto Sales Company; $10,000; Frank S. Vandervoort, H. H. Henkel, F. J. Whitmeyer.

Minoola, Minn.; Martins Taxi Service, Inc.; $10,000; to deal in automobiles and taxicabs; J. W. Robertson, O. J. Smith, F. A. Duff.

Minneapolis, Minn.; La Crosse Auto Company; $60,000; A. Hirschheimer, B. F. Hamey, B. R. Kelly.

Kansas City, Mo.; Bapst Motor Company; $5000; to deal in motor cars and trucks; R. E. Watson, M. S. Neal, G. H. Bapst.

Kansas City, Mo.; Hathaway Motor Company; $15,000; to deal in motor car and motor vehicles; C. E. Hathaway, M. A. Hathaway, H. C. Page.

Kansas City, Mo.; Marion-Handley Sales Company; $20,000; L. C. Cadenhead, F. A. Britton, Glen Bruner, W. B. Harrison.

St. Joseph, Mo.; Farmer Auto Company; agents for Hudson and Dodge cars; S. R. Farmer.

St. Joseph, Mo.; Grant Motor Company; $5000; to do a general motor business; L. R. Grant, John W. Broaddus, Leonard Gultan.

St. Joseph, Mo.; The Robidoux Automobile Company; $15,000; L. T. Harvey, E. O. Harvey, Dale Harvey.

St. Louis, Mo.; The Ayres Automobile Company; $15,000; Joseph T. and C. E. Ayres, Samuel Breadon.

St. Louis, Mo.; Columbia Auto Sales Company; to sell Ford cars; Joseph Rosen, Joseph Gilliam, C. A. Reichart.

St. Louis, Mo.; Vigar Motor Car Company; $5000; George F. Vigar, Frank J. Riefling, Kitty Riefling.

Lakewood, N. J.; Lakewood Motor Company; $10,000; to deal in motor vehicles; Pitney C. Havens, John M. Comine, Arthur Vanschoick, W. Durward McCloskey.

Paterson, N. J.; Broadway Tire and Supply; $25,000; to deal in automobiles and accessories; A. Smith, C. H. Bogert, F. Cohen.

Albany, N. Y.; Nichols & Webster; $10,000; to deal in motor cars and parts; W. B. Hughes, W. H. Webster, J. C. Nichols.

Albany, N. Y.; M. L. Simon, Inc.; $20,000; to deal in automobiles and to operate a garage; Louis A. Levin, Isaac Siegel, Monroe L. Simon.

Brooklyn, N. Y.; Emay Motor Car Company; $5000; to deal in autos, motors, engines, tires and garages; A. B. Reed, A. Birubaum, N. Marks.

Brooklyn, N. Y.; Presturn Manufacturing Company, Inc.; $50,000; to deal in automobiles and wearing apparel; Eugene P. Brannigan, Peter J. Kane, Mathew V. Omalley.

Buffalo, N. Y.; Becker-Hertzog Motor Company; $25,000; to deal in motor vehicles; A. Hertzog, A. E. and F. Becker.

Buffalo, N. Y.; Frey & Pango, Inc.; $20,000; to deal in autos and accessories; W. J. Bullion, S. F. Pango, J. W. Frey.

Buffalo, N. Y.; Niagara Sales Company, Inc.; $10,000; to deal in autos and repair and also maintain an equipment station; W. E., M. L. and H. J. Parsons.

New York, N. Y.; Automobile Securities Corporation; $100,000; to deal in automobiles and accessories; C. R. Allison, P. Lacroix, W. L. Glover.

New York, N. Y.; The Dean Murray Garage Company, Inc.; $30,000; to deal in autos and aeroplanes and garages; H. R. O. Howsen, J. C. Murray, D. L. Dean.

New York, N. Y.; Flato Company, Inc.; $200,000; to deal in autos, motors, vehicles; J. H. Roach, C. Hopton, I. Flato.

New York, N. Y.; International Motor Repair and Machine Company; $5000; to deal in autos, machinery and accessories; H. Meyer, W. Schlotterback, H. Weiss.

New York, N. Y.; The No-Car-Bon-Ne; $100,000; to deal in autos, engines, machinery and supplies; H. M. Desulykowsky, G. Freimarck, S. Nemeth.

Cincinnati, O.; The Star Motor Car Company; $200,000; Louis Tyroler, David W. Rudisell, G. Usher Finn, Arthur W. Fischer, Milton Cayce.

Cincinnati, O.; M. and T. Auto Company; $20,000; to deal in motor cars and accessories; C. W. Hutchinson, Phil J. Troustine, F. C. Wood, M. T. Williams, Samuel H. Troustine.

Cleveland, O.; Adams Motor Car Co.; $10,000; to deal in motor cars; John H. Smart, W. W. Watkins, William T. Bishop, A. L. Lawrence, Carl B. Ford.

Cleveland, O.; Carris-Franklin Company; $40,000; to deal in motor cars and supplies; Ralph H. Frank, C. S. Carris, G. H. Gallagher, Frank W. Caldwell, F. H. Crew.

Cleveland, O.; Eller-Olatyn Sales Company; $10,000; to deal in cars; S. J. Olatyn, Herbert F. Eller, Joseph S. Backowski, Alfred L. Steuer, M. E. Tettelbach.

Cleveland, O.; A. L. Englander Motor Company; $25,000; to deal in motor cars; Fred Desberg, A. L. Englander, M. A. McCormack, I. Crohs, S. I. Powell.

Cleveland, O.; Tomson Motor Car Company; $10,000; to deal in cars; Otto Tomson, W. H. Dunn, H. Bush, E. A. Branch, F. Klein.

Columbus, O.; Eigensee & Douglas Company; $5000; to do a general motor car business; Levi E. Douglas, Frank B. Douglas, J. W. Eigensee, Horace S. Kerr.

Dayton, O.; The Baggott-Strickler Motor Car Company; $25,000; John A. Baggott.

Dayton, O.; Consolidated Automobile Company; $20,000; W. C. Littleton, F. R. Vanniman, A. R. Shropshire, George A. Stults, Edward E. Duncan.

Newark, O.; H. B. Coen Company; $15,000; to deal in automobiles and accessories; H. B. Coen, S. M. Coen, H. S. Cashatt, D. M. Hamilton, A. K. Overturf.

Wilkinsburg, Penn.; Kuhn-Mutchler Company; $5000; to deal in automobiles; Miles H. Mutchler, J. C. Kuhn, W. S. Kuhn.

Providence, R. I.; Kenworthy-Clark Company; $5000; central motor car business; Harry E. Kenworthy, H. W. Tyas, P. S. Clark.

Nashville, Tenn.; Rutherford Auto Company; $10,000; to engage in buying, selling and repairing automobiles; A. G. Rutherford, D. E. Rutherford, J. W. Rutherford.

Fort Worth, Tex.; Hubb Diggs; $25,000; to sell motor cars; Hubb Diggs, Dan E. Lydick, J. H. Barwise, Jr.

Midland, Tex.; The Western Auto Company; $10,000; K. B. Nutt, C. W. Kerr, Allen Tolbert.

Spokane, Wash.; Enger Motor Car Company; $75,000; to handle the Enger and Elcar lines; J. Peeper, Sam H. Cone, B. F. O'Neil.

Waterville, Wash.; Waterville Auto Company; $30,000; N. P. Nelson, H. T. Suthis, E. Pfueller, Harmon Wilcox, L. J. Laymance.

Parkersburg, W. Va.; H. Marsh & Co.; $10,000; to deal in automobiles, trucks and motor vehicles of all kinds; H. Marsh, K. V. Marsh, Eldorus McCoy, H. B. Dodge, C. T. Smith.

Milwaukee, Wis.; Lando L. Albert Sales Company; $5000; to deal in Ford and other cars and to also operate a garage; Lando L. Albert, John B. Toner, Frank J. Vebber.

Newly Organized Manufacturers of Cars.

Dover, Del.; Crowthers Motors Corporation; $5,000,000; to manufacture motor cars and their parts; F. R. Hansell, George H. B. Martin, S. C. Semour.

Gary, Ind.; The Wing Motor Car Company; $10,000; to manufacture automobiles; A. A. Feder, Joseph Fluxman, William Feder.

Newark, N. J.; Arcadia Trailer Corporation; $200,000; to manufacture auto trailers; Charles B. Herendeen, Harry R. Drake, Frank D. Burgess.

Jersey City, N. J.; Franklin Sales Company; $10,000; to manufacture automobiles, engines, motors and accessories; Augustus G. Southworth, Augustus R. Southworth, Anna Shanahan.

Trenton, N. J.; Sykes Motor Company, Inc.; $25,000; to manufacture, repair and deal in motorcycles, bicycles, automobiles and sporting goods; John Sykes, C. H. Beebe, A. W. Sykes.

Gloucester City, N. Y.; Rogers Construction Company; $100,000; to manufacture and deal in automobiles, boats and aeroplanes; Francis C. Rogers, James M. Hamer, Arabella Rogers.

Cincinnati, O.; The Springford Manufacturing Company; $15,000; Anthony Bury, Albert Ficks, George A. Bury, E. C. Shumard, C. A. Heilker.

Philadelphia, Penn.; Crother Molozos Corporation; $5,000,000; to manufacture motor cars of all kinds; F. R. Hansell, George H. B. Martin, S. C. Seymour.

Garages and Repair Shops Newly Chartered.

Kellogg, Ida.; Yost Garage Company; $25,000; F. W. Yost, T. R. Mason, F. E. Ellis, L. F. Macheski, W. W. Papesh.

Chicago, Ill.; Alliance Garage Company; $2400; William M. Booth, Stuart B. Kouhn, R. J. Nordhold.

Chicago, Ill.; Englewood Motor Car and Garage Company; $2500; H. S. Rector, Ross B. Rector, Howard W. Lewis.

Ligonier, Ind.; Lincoln Highway Garage Company; $20,000; to do a general garage business; James W. Smith, Frank P. Wood, Samuel J. Williams, Leo Kerner, George Bryan.

Chelsea, Mass.; Colonial Garage, Inc.; $10,000; John E. Casey, Fannie M. L. Gile, Amos M. McLean.

Boston, Mass.; W. A. Wright Garage, Inc.; $10,000; W. A. Wright, J. B. Manley, G. W. Caldbeck, L. P. Leach, L. J. Harvey.

Newark, N. J.; Stickel Garage, Inc.; $100,000; to operate garages and general automobile 'bus.

Bronx, N. Y.; Overlook Garage, Inc.; $2250; Grant B. Rockwell, Edward J. Lansey, Walter L. Hunger.

Brooklyn, N. Y.; Kramer's Garage, Inc.; $2000; Michael Kramer, Moses H. Kramer, Bella Rabinowitz.

Sourlake, Tex.; Hardy County Garage and Supply Company; $10,000; R. F. Theis, G. W. Sain, F. H. Carpenter.

Unclassified Incorporations Recently Made.

Indianapolis, Ind.; Indianapolis Motor School; $5000; Q. G. Nobilitt, F. H. Sparks, H. M. Stanton.

Dubuque, Ia.; Overland-Dubuque Company; $10,000; Overland and Willys-Knight agency; John J. Hazel, C. R. Spencer.

Middlesboro, Ky.; Southern Auto Transfer Company; $1000; J. J. Southern, R. L. Southern, Maggie Southern.

East Orange, N. J.; National Motor Service; $50,000; to operate taxicabs and engage in general transportation; Harry H. Picking, Felix R. Smith, Gordon Grand.

Trenton, N. J.; Clinton Hill Ford Agency; $2000; to conduct a general auto service and sales agency; B. Kenneth McKenzie, H. T. Davimos, H. Deutsch.

New York, N. Y.; Blue Chemical Corporation; $25,000; chemicals, composition for removing carbon from autos, motors; E. A. Carlin, R. B. McCutcheon, L. Mair.

New York, N. Y.; New York Saratoga Renting Company, Inc.; $2000; Louis J. Kahn, Jacob Kahn, Arthur N. Slomon.

New York, N. Y.; Truckford Sales Corporation; $10,000; A. E. Hoffman, H. E. Roehrs, R. Muller.

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Canton, O.; J. W. Watts Company; $25,000; to do painting; John W. Watts, Charles R. Brownell, John F. H. Diebel, Walter H. Buchman.

Cleveland, O.; The Hess Strayer Auto Service Company; $10,000; Harry Hess, H. J. Strayer, C. D. Hess, H. F. Strayer, T. D. Lamb.

Lakewood, O.; The Riverside Taxicab Company; $1000; W. Hamushek, S. J. Friedman, Frank L. Miller, R. Bigham, E. C. Warner.

Pittsburg, Penn.; American Automobile Service Company; $10,000; David S. Leiberman, Benjamin S. Reswick, Joseph Reichman.

Philadelphia, Penn.; Cuban Motor Spirits Company; $1,000,000; to acquire machinery for condensing and fractionating gases into motor spirits; Herbert E. Latter, C. L. Rimilinger, M. V. Haywood.

Dallas, Tex.; Randal Adams Company; $10,000; H. M. Randal, H. O. Adams, Mrs. Bama Adams.

Gatesville, Tex.; Maxwell & Gilliam Auto Sales Company; $12,000; P. L. Maxwell, A. G. Gilliam, D. D. McCoy.

Port Arthur, Tex.; Overland Port Arthur Company; $6000; Albert Perkins, H. M. Smith, R. P. Smith.

San Marcos, Tex.; Lindsay Transfer Company; $31,000; J. L. Lindsey, Clinton Lindsey, F. W. Lindsey.

Accessories, Equipment and Supplies.

Chicago, Ill.; Hope Motor Livery Company; $1500; James P. Marzano, Annie B. Marzano, Joseph A. Marzano.

Moline, Ill.; Hepburn & Pope Motor Sales Company; $5000; G. C. Hepburn, Henry Pope, E. M. Waggoner.

Springfield, Mass.; Motor Industry Appliance Company; $50,000; Frank W. Arthur, A. C. Schmeizer, B. F. Arthur, R. S. Miles.

Saginaw, Mich.; The Saginaw Co-Operative Auto Supply and Enameling Company; $10,000; Earle L. Rulison, I. L. Marker, George B. Miller, William H. Roberts, Albert C. Klof.

Albany, N. Y.; Albany Rubber Tire Company, Inc.; $3000; Jennie F. Hurd, Edward M. Hurd, M. O'Donnell.

New York, N. Y.; Feres Broadway Shop, Inc.; $10,000; to deal in auto tires, tubes and equipment; A. Hintz, A. W. Waller, J. J. Fero.

New York, N. Y.; Keystone Auto Supply Company; $1,000,000; to manufacture auto supplies of all kinds.

New York, N. Y.; Triple Thread Tire Company; $500,000; to manufacture and deal in motor car accessories.

Syracuse, N. Y.; Northway & Christopher, Inc.; $5000; to deal in rubber tires, autos, bicycle parts; D. J. Seubert, J. H. Burke, G. S. Northway.

Akron, O.; Denmead Rubber Company; $50,000; John W. Denmead.

Cleveland, O.; Big Four Tire and Rubber Company; $10,000; to deal in tires; Alonzo M. Snyder, D. H. Tilden, Horatio Ford, W. J. Budd, G. M. Reilly.

Cleveland, O.; Bottenfield Tire Company; $400,000; to sell tires; Sidney T. Bottenfield, E. J. Speck, C. A. Myers, A. D. Howe, J. B. Kanner.

Cleveland, O.; De Noon Sales Company; $5000; to deal in motor car accessories; I. N. De Noon, Fred S. Hones, N. D. Sample, W. J. Striebinger, L. M. Knoll.

Cleveland, O.; F. & F. Tire and Supply Company; $10,000; to deal in tires and motor car supplies; D. Gobille, Frank L. Fickel, Ella Fickel, Anthony Fickel, Fred A. Fickel.

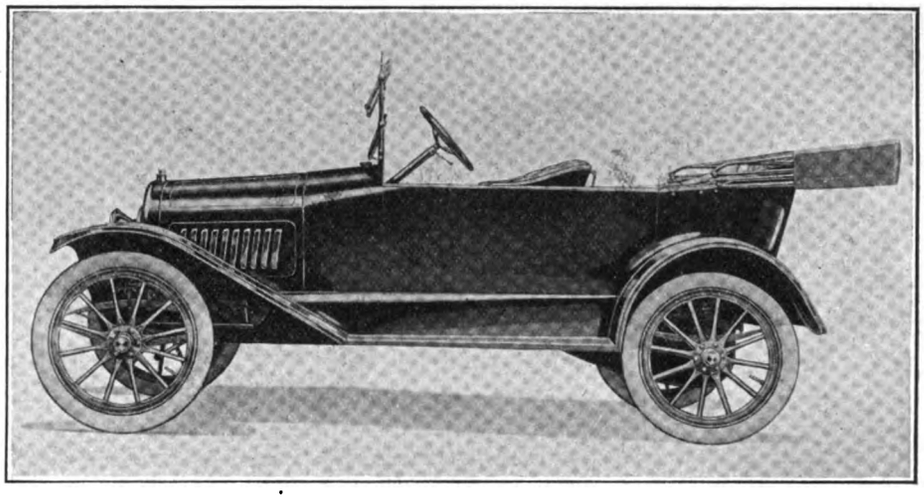
Cleveland, O.; Reliable Auto Heater Company; $400,000; P. R. White, J. B. Langley, E. J. Freer, F. E. Clar, M. De Vaughn.

Dayton, O.; The Coffield Tire Protector Company; $50,000; Peter T. Coffield.

Midland, Tex.; Bogg Puncture Proof Tube Company; $10,000; George D. Elliot, William W. Wallace, B. C. Girdley.

Texarkana, Tex.; Texarkana Auto Supply Company; $10,000; C. E. Palmer, Joe Hughes, F. McElreath.

The New Metz Model for 1917.



The 1917 Metz Touring Model, Manufactured by the Metz Company, Waltham, Mass., Priced at $545. Complete Mechanical Description in The Automobile Journal, Sept. 25, 1916.

Motor, four-cylinder block cast.
Bore and Stroke, 3⅞ by 4 inches.
Horsepower, 25.
Lubrication, constant level splash.
Carburetor, A. W. T. float feed.
Fuel Feed, gravity.
Ignition, Dixie high tension.
Starting and Lighting, Gray and Davis.
Gearset, Metz gearless transmission, providing seven speeds forward and one reverse.
Wheelbase, 108 inches.

NEW CONCERNS AND CHANGES

General News Regarding Transfer of Ownership and Opening of Garages and Agencies and Changes of Names.

The following data relate to the establishment of new concerns, including agencies, garages, branches, service stations, repair shops, etc., and from valuable information. Herewith is also recorded the recent changes of names of business concerns in the industry and allied lines, and the transfers of ownerships of businesses. The record includes all the states and is classified for convenience.

New Business Locations and Removals.

Los Angeles, Cal.; Hydraulic Auto Truck Corporation, formerly at 620 Central building, is now located at 617 W. Manhattan place.

Los Angeles, Cal.; Diamond Rubber Company of 1060 South Olive street is now located at 946 South Broadway.

Los Angeles, Cal.; Western Mechanical Works, 1138 South Main street, has been moved to 520 W. Pico street.

Oakland, Cal.; Cashin's Garage, 405 Santa Clara avenue, Oakland, Cal., has been moved to 1022 Eye street, Fresno, Cal.

San Diego, Cal.; F. C. Abrans & Co., 1345 First street, is now located in Webster, Cal.

Denver, Col.; Heiser Brothers Company, distributors for Colorado and Wyoming, has been moved from 1236 Broadway into a new $38,000 building at 700 Broadway. The new structure is 50 by 125 feet, one story and full basement; fireproof construction of brick and reinforced concrete.

Atlanta, Ga.; Velie Motor Vehicle Company, 453 Peachtree street, has been moved to Moline, Ill.

Dixon, Ill.; Freudenberg Rubber Company, 111 East First street, has been moved to Aurora, Ill.

Peoria, Ill.; W. E. Johnston has moved to 103 Flora avenue. He was formerly located at 1908 Main street.

Rock Island, Ill; Morris Wilcher is now located at 1102 Dover street, Davenport, Ia.

Rock Island, Ill.; Rock Island Auto and Tire Works, 2406 8th avenue, has been moved to 2335 Wilkes avenue, Davenport, Ia.

Davenport, Ia.; McGivern Motor Company, 115 Harrison street, has been moved to Marengo, Ia.

Sioux City, Ia.; Huffman Auto Company has been moved to 2036 Farnum street, Omaha, Neb.

Louisville, Ky.; Falls City Auto and Machine Company, 1504-6 West Main street, has been moved to 117 South 22nd street.

New Orleans, La.; Demack Motor Car Company, 923 Lafayette street, has been moved to 710 Baronne street.

Boston, Mass.; The Garford Truck Company will occupy the new one-story building on Commonwealth avenue.

Boston, Mass.; The New England Velie Company, distributor of the Velie car in New England, is now in its new sales rooms and headquarters at 1123 Massachusetts avenue.

Worcester, Mass.; H. E. Plimpton, distributor for Stearns-Knight cars, has moved from 129 to 834 Main street.

Detroit, Mich.; Advance Sales Company, 226 Hazlewood street, is now located at 237 West 10th street, Erie, Penn.

Grand Rapids, Mich.; The Phelps Auto Sales Company has been moved from Lafayette avenue and Michigan street to the Reid Garage, Michigan street and Bond avenue, N. W.

Republic, Mich.; Jones & Laxtrom have opened a garage.

St. Joseph, Mich.; Edgewater Garage is now located at 298 Territorial street, Ben-

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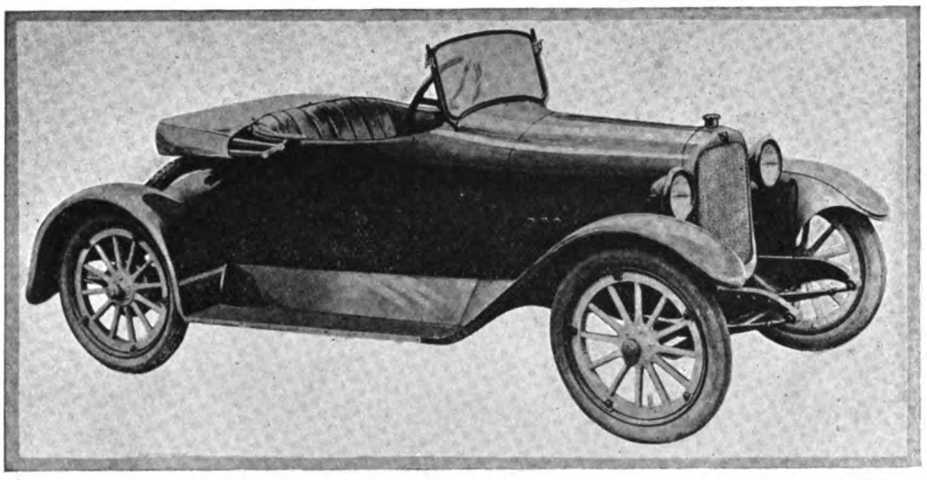
Maibohm Four Semi-Racing Car.



The Four-Cylinder Maibohm Roadster, Manufactured by the Maibohm Motors Company, Racine, Wis.; Price, $695. Complete Mechanical Description in The Automobile Journal, Sept. 25, 1916.

Motor, four-cylinder L head.
Bore and Stroke, 3⅛ by 4 inches.
Horsepower (S. A. E.), 15⅝.
Lubrication, pressure splash.
Carburetor, Zenith racing type.
Fuel feed, gravity from dash.
Cooling, thermo-syphon.
Ignition, Atwater Kent.
Starting and Lighting, Disco.
Clutch, three disc, dry plate.
Gearset, three-speed selective.
Rear axle, semi-floating.
Springs, semi-elliptic.
Wheelbase, 105 inches.

ton Harbor, Mich.

Kansas City, Mo.; K. C. Sales and Service Company, 1221 Admiral building, has been moved to Carrollton, Ill.

Kansas City, Mo; Myers-Ebersole Motor Company, 1821 McGee street, has been moved to 1813 Grand street.

St. Louis, Mo.; Electric Garage and Service Company, 5189 Delmar avenue, has been moved to 1649 Grand street.

St. Louis, Mo.; Erwing Auto Repair and Rental Company, 4720 Delmar avenue, is now located at 1008 Dillon street.

St. Louis, Mo.; Federal Truck Company, 1215 Chestnut street, has been moved to 3615 Forest Park boulevard.

St. Louis, Mo.; The Motorcycle Club of St. Louis has been moved to 4668 Pope avenue, from 2360 Clarence street.

St. Louis, Mo; Patterson, Abrams Auto Company of 4701 Washington avenue is now at 5233 Cabanne street.

Binghamton, N. Y.; Binghamton Ford Sales Company has been moved from 25 Henry street to 235 Water street.

New York, N. Y.; The Crow Motor Sales Company has been removed to Broadway and 53rd street. The company will handle the Hollier, Crow-Elkhart and Kline.

New York, N. Y.; Kent Motors Corporation, distributors for the Elcar and Marion lines, has removed its executive offices for wholesale and export to the United States Rubber building, 1790 Broadway, where it occupies the suite vacated by the Sterling Motor Car Company.

New York, N .Y.; Glover Manufacturing Company, 250 W. 54th street, has been moved to 65 Murray street.

Columbus, O.; The Winders Motor Sales Company, central Ohio distributor for the Chevrolet, has been moved into a new and larger building at 182-184 East Long street.

Toledo, O.; Maumee Motor Car Company, 1017 Jefferson avenue, has been removed to 244 Jefferson street, Detroit, Mich.

Providence, R. I.; Motor Transportation Service Company, 272 West Exchange street, Providence, R. I., has located at 484 Broome street, New York City.

Dallas, Tex.; J. D. Wheelan of 339 Main street, Dallas, Tex., has moved to the Strand theatre, Fort Worth, Tex.

Ogden, Utah; Ogden King Eight Company is now at 2564 Washington avenue, larger quarters for its show room.

Seattle, Wash.; The Saxon Motor Sales Company has been moved into larger quarters at 906 East Pike street. F. E Hardesty is manager.

Seattle, Wash.; Stewart Products Service Station has been moved into new and permanent quarters at 910 East Pike street.

Tacoma, Wash; Louis Schabel, King dealer, has moved to 12th and A streets, where facilities are better for King owners.

Appleton, Wis.; The Main Auto Company's address is now Box 45, Clintonville, Wis.

Recent Transfers of Business Ownerships.

Aledo, Ill.; Roy Lingafelter has purchased the interests of J. Crapser in the Aledo Garage. Gail Johnson will continue as part owner in the business.

Lewiston, Ill.; Hamer Shaw and Dr. C. C. Pratt have purchased the Crescent Garage.

Paxton, Ill.; Tom Flora has purchased the automobile livery cars owned by John O'Hare and will conduct the business at the Grayson barn on West State street.

Audubon, Ia.; Chris Hosgh has purchased the Anton Juhl Garage.

Beaconsfield, Ia.; Don Nichols has bought the Reasoner & Reasoner Garage.

Carson, Ia.; Charles Coons has bought out his partner, Orville Henry, and will conduct the business of the Main Garage.

Harlan, Ia.; Chris Bunderson has bought out his partner, Charles Renking, in the Boysen & Renking Garage.

Odebolt, Ia.; Fred Einspahr has bought the interest of his partner, Fred Kresenstjerna, in the Einspahr Auto Company.

Stacyville, Ia.; J. A. Weber has bought the Stacyville Garage from R. I. Galloway.

Tingley, Ia.; H. H. Dufty and J. H. Blackmore have bought the Tingley Garage from Jonas Fender.

Woodward, Ia.; George Pring has bought an interest in the Maxwell Garage.

Gardner, Kan.; Ralph Pine has purchased the repair business of L. I. Gray.

Sedan, Kan.; S. L. Ecker has bought the Oil Belt Garage from W. A. Barton. The Grant and Velie will be handled.

Stafford, Kan.; Asa and Harry Jolly have bought the Maupin Garage.

Bangor, Me.; Taber D. Bailey, proprietor of the Bangor Motor Company, has sold his interest to Horace W. Chapman.

Boston, Mass.; The Reliable Tire and Rubber Company has reorganized and changed its name to the Omter-State Rubber Company. It is now located in new sales rooms at 392-394 Newbury street.

Worcester, Mass.; J. Fred Powers has bought an interest in the Morgan & Corey Accessory Company.

Belding, Mich.; Knott Cobb has purchased a half interest in the business of the Belding Vulcanizing Company.

Grand Rapids, Mich.; J. T. Brown has retired from the Caire Garage and the firm's name is now Georia & Wood.

Northfield, Minn.; Walker & Drake have leased the Central Garage from Frank Curren, Benjamin & Godfrey.

Redwood Falls, Minn.; Mertz Brothers have dissolved partnership and Harvey Mertz will continue the garage.

St. Clair, Minn.; Leo Hardware Company has been purchased by Chadburn & Son.

Craig, Neb.; Bruce Moorehouse has bought a half interest in the West End Garage, Missouri Valley, Ia.

Craig, Neb.; Hamilton & Cornish have procured the Bovee Garage from Tamisiea & Moorhouse.

Dewitt, Neb.; Oscar Weibel has sold his garage to C. M. Messmore.

Fullerton, Neb.; Sronce & Gorman have dissolved partnership. Mr. Sronce has bought the interest of his partner.

Lincoln, Neb.; Jay Wiggins has disposed of his garage to Frank Harding.

Nebraska City, Neb; John P. Michelson has bought the garage of John DeFord.

North Loup, Neb.; C. B. Clark has bought out the City Garage.

Ravenna, Neb.; Peter Crash has bought out the Louis Vesely garage and automobile business.

Stuart, Neb.; Elmer Hewett has bought the Eby-Stuart Garage at Atkinson, Neb.

Langdon, N. D.; W. M. Wiltse has bought the Walker & Guchs vulcanizing plant.

Kramer, N. D; T. H. Zorn has bought the Millelson Garage.

Max, N. D.; John Liljendahl has sold his garage and agency and will establish a business at Brainerd, Minn.

Park River, N. D.; Clark Farup and David Mills have bought the Moore Auto Company's branch, which will be known as the Mills-Farup Auto Company. They have taken the Ford and Studebaker agencies.

Ray, N. D.; The McKinney-Fuller Motor Company has leased the new S. E. Hursh brick garage on Score street.

Salt Lake City, Utah; The Brown Automobile and Supply Company has purchased a lot on Main street, between Fifth, South and Sixth streets, on which the company will build a two or three-story building as a sales room.

East Putney, Vt.; Walter Parker has bought the C. A. Prouty garage business.

Appleton, Wis.; The Appleton Ford Company has changed its name to the Appleton Auto Company.

Crandon, Wis.; Sid Raymond has sold his garage to James A. McMillan.

Palmyra, Wis.; D. J. Williams & Son have purchased the Palmyra Garage.

Evanston, Wyo.; Jackson Brothers have bought the interest of W. V. Gregory in the Transcontinental Garage.

Garages and Repair Shops Newly Chartered.

Aurora, Ill.; The A. J. Berthold Company, Downer place and South Lake street, has opened a new $70,000 garage.

Cicero, Ill.; The Wassell Garage, West 12th street, has opened. The company will handle Reo fours and sixes.

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Decatur, Ill.; R. B. Shaw has leased the garage at 242 North Franklin street, formerly occupied by the Decatur Taxicab Company, and will conduct a service station and sales agency for Paige cars.

Ute, Ia.; Jack Chauncey has opened a new garage.

Hutchinson, Kan.; Eugene Caton has opened a repair shop in the rear of the Eaton Auto Company.

Ness City, Kan.; George L. Winton has opened the Little Garage.

Sterling, Kan.; Frank Cooper has opened a repair shop.

Detroit, Mich.; James G. Harcourt has opened a garage at 29 Antoinette street.

Detroit, Mich.; C. W. Parrish has opened a garage at 736 Cass avenue.

Ypsilanti, Mich.; C. W. Pool has opened a garage on Adams street.

Ypsilanti, Mich.; L. Schaible has opened his new garage on Michigan River street.

Cyrus, Minn.; Lud Kliegle has opened a new garage.

Hastings, Minn.; A. C. Bachman has opened a garage on Sibley street.

Beatrice, Neb.; The Beatrice Garage has opened at 116-118 North Seventh street.

Central City, Neb.; Jones & Wilson have opened a new garage.

Crete, Neb.; John Muff has opened a garage.

Hooper, Neb.; Timberg & Reets have opened a garage on East Main street.

Ogallala, Neb.; L. K. McKicker has opened a new repair shop.

York, Neb.; Dobbins & Roositer have opened a garage and repair shop.

Fargo, N. D.; Frederksen & Parrish have opened a repair shop in the Doyle Garage.

Burns, Ore.; Lampshire's Garage has been opened on the Pacific highway.

Wilkes-Barre, Penn.; N. Davis has opened a modern garage at 156 West River street which will be known as the Auto Inn Garage.

South Shore, S. D.; A. C. Berg has opened a repair shop.

Algoma, Wis.; Leo Seiler will open an automobile repair shop.

Cherokee, Wis.; W. J. Hutton, Jr., has opened a garage.

Agencies, Dealers and Service Stations.

Fort Morgan, Col.; T. D. Shelton has secured the Metz, Enger and Inter-State agencies for Morgan county. He is located at 1000 Ensign street.

Cicero, Ill.; Oak Park Avenue Motor Sales Company, 1212 South Oak Park avenue, will handle the Haynes, Hudson, Velie and Dodge.

New Bedford, Ill.; The Robertson Motor Car Company has opened a service station and ware room with Walter M. Clark in charge.

Huntington, Ind.; E. W. Carmichael, agent for the Monroe roadster and the Patterson six, has opened in the Briant block on East Franklin street.

Kingman, Kan.; N. H. Cannon has opened a vulcanizing shop.

Boston, Mass.; Lester Perrine, president of the Boice Perrine Company, 64 Brookline avenue, has taken over the agency for the Osgood Deflector.

Holyoke, Mass.; W. H. and Webster Jones Company, 43 Railroad street, has opened a service station for Willard batteries.

Lynn, Mass.; The Lynn Tire Exchange has been opened for business.

Worcester, Mass.; The Seymour Automobile Company, agent for the White and Paige Detroit, has opened a new service station.

South Bend, Mich.; Al Ditsch has opened a sales room at 124 Jefferson avenue and now sells the Haynes.

Alexandria, Minn.; A. F. Ley has opened a service station for Willard storage batteries.

Shakopee, Minn; Harold and Lester Brown have opened an automobile livery.

Benson, Neb.; William H. Gestring has opened a Ford service station on Military avenue.

Rochester, N. Y.; H. S. McKillop has opened at 65 Cortland street under the name of the De Luxe Sales Company.

Columbus, O.; Blair Motor Truck Sales Company, a new concern, is located at 60 East Spring with a display of Blair trucks.

Columbus, O.; W. M. Borrow & Co. has opened an automobile supply house at 43 West Broad street under the name of Broad and High Auto Supply Company.

St. Marys, O.; The Jasperson Supply Company has added motor car accessories to its line of mill and electrical supplies. The company conducts a wholesale and retail business.

Providence, R. I.; Pugh Brothers have opened sales rooms at Fall River, Mass., for the Overland line.

Watertown, S. D.; The C. L. Holt Automobile Company has been opened for business in the new Cannon building.

Walla Walla, Wash.; Johnston & Riesland, 21 West Alder street, have opened a new Willard battery service station.

Wenatchee, Wash.; Electric Supply Company has opened a Willard service station.

NEW BUILDING OPERATIONS.

Contracts Made and Plans Contemplated for Garages, Repair Shops and Service Stations.

In this department is presented a record from the various states of the plans and specifications in course of preparation by individuals and concerns, of the contracts awarded for the erection of new garages and the like, of additions, improvements and alterations either already made or under consideration, and of the business removals and new locations that have taken place within the past month.

Factories, Garages and Repair Shops.

Cripple Creek, Col.; C. A. Matthews is building a garage at 426 East Bennett street that will be equipped with all modern accessories. The Maxwell car is handled.

Chicago, Ill.; Harry Zisock of 2101 Western avenue will erect a garage at a cost of $18,000.

Havana, Ill.; White Brothers is erecting another garage on East Main street. When completed it will be up-to-date and the most modern in Havana. The company also owns a garage on Market street.

Creston, Ia.; The Creston Auto Company will erect a new garage on Adams street.

Herington, Kan.; B. O. Czarnowsky is erecting a garage.

Boston, Mass.; The Chandler Motor Car Company of New England is erecting a new fireproof, six-story building on Commonwealth avenue.

Baraga, Mich.; W. W. Gilson is erecting a garage 52 by 68 feet. He will conduct general garage and livery business.

Montello, Mass.; A. Cirelli is building a public garage.

Bay View, Mich.; William Grotemut will erect a garage on Main street.

Detroit, Mich.; E. Thulin, 705 Lakewood, will erect a one-story garage. It will be modern throughout and will cost $18,000, to be located on Jefferson street.

Michigamme, Mich.; Thomas Goodreau will erect a garage.

Tecumseh, Mich.; August Splettstesser is erecting a repair shop.

Houston, Minn.; C. C. Smith and Rudi Spaag Houston are erecting a garage 40 by 60 feet.

Park Rapids, Minn.; Tom Wilson will erect a brick garage 50 by 140 feet.

Kansas City, Mo.; Richard T. Romine has purchased land on Montgall avenue and will erect a new public garage. He operates a public garage at 15th street.

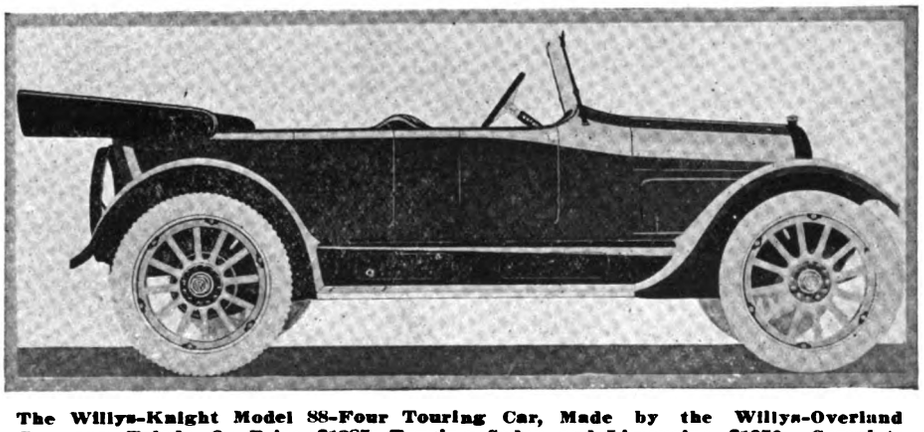
Central City, Neb.; George Martin is building a garage 66 by 124 feet.

Imperial, Neb.; A. A. Dunn is building a garage 50 by 120 feet.

Morrill, Neb.; McCain & Shaw will open a garage.

Omaha, Neb.; Ed Callahan is building a two-story steel and concrete garage at 13th and Jackson streets. The garage is

Willys-Knight Model 88-Four.



The Willys-Knight Model 88-Four Touring Car, Made by the Willys-Overland Company, Toledo, O; Price, $1285; Touring Sedan and Limousine, $1950. Complete Mechanical Description in The Automobile Journal, Sept. 25, 1916.

Motor, Willys-Knight four.
Bore and Stroke, 4⅛ by 4½ inches.
Horsepower, 40.
Lubrication, force feed and splash.
Carburetor, Tillotson horizontal.
Ignition, battery and distributor.
Cooling, thermo-syphon.
Starting and lighting, Auto-Lite two-unit.
Clutch, cone.
Gearset, three-speed selective.
Rear Axle, full floating.
Rear Springs, cantilever.
Wheelbase, 121 inches.
Tires, 34 by 4½ inches.

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132 by 132 feet.

Rochester, N. Y.; Louis Gisaud, 165 Shepard avenue, will erect a new garage and sales room in Scio street.

Syracuse, N. Y.; Grody & Silverman, W. Genesee street, will erect a new garage on Willow street.

Syracuse, N. Y.; The Syracuse Motor Car Company will erect a two-story brick and concrete garage at the corner of Wallace street, to cost $60,000.

Berea, O.; The Hathaway Motor Company will erect a two-story brick garage to be located on Front street. It will cost $15,000.

Toledo, O.; C. E. Baker will erect a modern fireproof garage.

Philadelphia, Penn.; The Gorson Automobile Exchange, 238 North Broad street, will build a three-story garage and service station at Broad and Melon streets, 86 by 86 feet.

Bruce, S. D.; Miron Bunday is erecting a garage.

Flandreau, S. D.; Amdahl Brothers is building a garage 25 by 100 feet.

New London, Wis.; J. C. Freeman will open a garage.

Contracts Awarded.

Philadelphia, Penn.; M. W. Young; one-story brick garage, 21x23; at 6425 Woodbine avenue; for Wendell & Smith; $1800.

Philadelphia, Penn.; John P. Fallon; one-story brick garage, 18x100; at northeast corner 62nd and Irving streets; for I. P. Clarke; $2800.

Philadelphia, Penn.; J. G. Miller; one-story garage, 10.6x19.6, at 2412 Gulf road; for L. A. Davis; $600.

Philadelphia, Penn.; Thomas P. Lee; one-story stone garage, 30x80; 5651 Cherry street; $1500.

Philadelphia, Penn.; George W. Crosley; one-story brick garage, 18.6x20, at 4721 Oakland street; for Thomas H. Earley; $700.

Philadelphia, Penn.; James Hilliard; one-story garage, 42x115; at 1714-46 Venango street.

Philadelphia, Penn.; F. L. Hoover & Sons; one-story garage, 28x42; at factory of Clayton W. Nichols, corner Beach and Poplar streets.

Philadelphia, Penn.; Carl E. Mayer; one-story brick garage, 200x18; with wing 39 x18; on north side Olney avenue, east of American street; $3000.

Philadelphia, Penn.; John Fotheringham; one-story brick garage, 18x20; at 5000 Penn street; for John Scott; $800.

Philadelphia, Penn.; M. E. Rodgers; one-story brick garage, 60x20; on north side Ruan street, east of Orchard; for Elizabeth Campbell.

Philadelphia, Penn.; McClintock & Weaver; one-story stone garage, 20x20, at 108 Gowen avenue; for T. Y. Olsen; $800.

Philadelphia, Penn.; Rush Brothers; one-story brick garage, 18x20; on east side 11th street, north of 66th avenue; for F. A. Boyer; $15,000.

Philadelphia, Penn.; J. D. Fisher; two-story brick garage, 78x100; at northeast corner 59th and Media streets; for W. H. Purdy; $15,500.

Philadelphia, Penn; Harry H. Yerger; one-story brick garage, 38x20; at 1625 Spencer street; for S. Frowm; $850.

Philadelphia, Penn.; John George & Son; one-story brick garage, 17.10x26; at 5139 Germantown avenue; for W. H. Galbraith;

Philadelphia, Penn.; Henry A. Hobert; one-story brick garage, 45x70; at 1140 West Ontario street; for J. Reichenback; $2500.

Philadelphia, Penn.; Jacob Lotz; one-story brick garage, 75x60; on west side Salmon street, south of Womrath street; $2500.

Philadelphia, Penn.; W. L. Frame; one-story brick garage, 20x25; at 6121 Walton avenue; for William J. Walz; $950.

Philadelphia, Penn.; Jacob Gaertner; one-story brick garage, 18x80; at 3027 Memphis street; for Albert Haas; $1800.

Philadelphia, Penn.; John McShain; one-story brick garage, 54x173; at 4312-16 North Broad street; for Fiedl W. Kroesser, $12,500.

Alterations, Improvements and Additions.

Hartford, Conn.; The Colonial Auto Company, 1279 Main street, has built a new stock room next to the sales room.

Chillicothe, Ill.; The Square Deal Garage in order to cope with its increasing business is building an addition to the rear of the building.

Cedar Rapids, Ia.; C. F. Groll will build an addition to his garage on East Seventh street.

Hastings, Mich.; The Lawrence Service Company, Studebaker agent, has remodeled its garage.

Red Wing, Minn.; C. A. Betcher will erect an addition to his garage.

St. Paul, Minn.; The Martin Auto Company, 543 Main avenue, will enlarge its garage.

St. Peter, Minn.; W. E. Doty has bought the Walter Rice livery stable and is remodeling it into a garage.

St. Albans, N. Y.; The Foundry Motor Car and Manufacturing Company is erecting a big addition to its plant.

Toledo, O.; The Logan Garage and Machine Company has enlarged its quarters. It is located at 329-331 Broadway.

Clinton, Wis.; Frank Bittner, agent for Ford cars, is remodeling the Bittner property on the square.

Plans and Specifications.

Gadsden, Ala.; S. P. Billingsley; one-story garage; $5000.

Little Rock, Ark.; Green Motor Car Company; two-story fireproof garage and salesroom; reinforced garage and salesroom, reinforced concrete, front of pressed brick with full plate glass windows.

Bridgeport, Conn.; Matthew Lamberg, 1192 State street; one-story garage, 85x85x 122; $10,000.

Bridgeport, Conn.; Frank Jacoby, 1083 Broad street; three-story garage, 80x120; $8000.

Bridgeport, Conn.; Nicholas Horwath; one-story garage, 50x81; $3000.

Bridgeport, Conn.; Henry Kenny; one-story garage, 42x133; with wing 40x60; $7000.

East Litchfield, Conn.; Ernest Hawe, Newport, R. I.; two-story garage, 23x33; $5000.

Bellevue, Del.; William G. Cox, 1015 Broome street; 2½-story garage, 35x45; $6000.

Washington, D. C.; T. J. Leonard, 1245 Goodhope road; one-story public garage, 85x45; $7500.

Green Cove Springs, Fla.; Frank Gustafson; one-story garage, 42x67; $3000.

Beardstown, Ill.; R. C. Schell, 116 N. State street, Bloomington, Ill.; two-story garage and salesroom, 60x100; $15,000.

Chicago, Ill.; Wheeling Corrigating Company, 2547 Arthington street; one-story private garage, 60x120; $50,000.

Chicago, Ill.; A. J. Fischer & Son, 4011 N. Robey street; one-story garage, 60x125.

Chicago, Ill.; A. Lisowski, 1137 Noble street; one-story garage, 21x35.

Chicago, Ill.; A. Christianson, 5343 S. Ashland avenue; one-story public garage, 50x121; $9000.

Chicago, Ill.; Frederick W. Patterson, 834 East 43d street; one-story garage and salesroom, 50x150.

Chicago, Ill.; Mrs. C. M. Fosha, 4121 West Park avenue; one-story garage, 50x125.

Chicago, Ill.; G. W. Woodward, 5035 W. Madison street; one-story public garage, 50x150; $25,000.

Chicago, Ill.; A. Peterson, 738 Christiana avenue; one-story garage, 48x117; $7000

Chicago, Ill.; Arthur Durker, 6459 South Peoria street; two-story garage, 75x130; $20,000.

Chicago, Ill.; E. B. Wolf & Co., 79 W. Monroe street; one-story garage, 70x260; $25,000.

Chicago, Ill.; Alexander Bauer, 233 W. Huron street; four-story public garage, 115x127; $50,000.

Chicago, Ill.; H. Zisook, 2101 N. Western avenue; one-story garage, 75x100; $18,000.

Chicago, Ill.; George Parradee, 6340 Stony Island avenue; one-story garage, 18x85; $5000.

Chicago, Ill.; William Gauger, 56 W. Randolph street; one-story public garage, 100x180; $20,000.

Chicago, Ill.; Garfieldian Motor Station, 3816-18 Madison street; one and two-story public garage; 54x158; $12,000.

Chicago, Ill.; W. T. Miller, corner Cicero and Congress streets; one-story garage, 50x155; $12,000.

Chicago, Ill.; Reliance Electric Company, E. A. Cassin, secretary; 1286 Milwaukee avenue; one-story garage; $25,000.

Chicago, Ill.; Charles Vedra, 3734 W. 26th street; one-story public garage, 50x125; $10,000.

Chicago, Ill.; T. J. Campbell, 6241 Ashland avenue; one-story garage, 50x150; $12,000.

Chicago, Ill.; Phillip F. W. Peck Estate, 53 W. Jackson boulevard; four-story automobile salesroom and service station, 98x76; lessee, Marmon, Chicago Co., 2420 South Michigan avenue.

Danville, Ill.; J. E. Johnson; one-story private garage, 18x20; $1200.

Jacksonville, Ill.; C. N. Priest, 1059 W. College avenue; one-story public garage, 80x115.

Pekin, Ill.; O. L. Cottingham; one-story garage, 50x90.

Peoria, Ill.; Fred Harbers & Son, 900 Fisher avenue; one-story garage, 100x150; $25,000.

Peoria, Ill.; Pinkerton Motor Co., 817 Main street; one-story public garage, 80x107; $25,000.

Springfield, Ill.; Oscar Ansel, 317-19 N. Third street; one-story public garage, 50x150.

Wilmette, Ill.; B. Brune, 3952 N. Robey street; one-story garage, 60x159; $10,000.

Hammond, Ind.; Dr. R. O. Ostrowoski 716 Hohman street; one-story garage, 25x25; $1500.

Vendersburg, Ind.; J. L. Asborne; one-story public garage, 68x66; $6000.

Davenport, Ia.; Wolfer-Cadillac Company; one-story garage, 64x150; $20,000.

Malvern, Ia.; George F. Sawyers; two-story brick and stone garage, 72x109; $10,000.

Northboro, Ia.; Trulock & Holmes; two-story public garage, 38x90; $8000.

Salina, Kan.; G. L. Hudkins; one-story garage, 50x100; $6500.

Louisville, Ky.; Kentucky Tire and Rubber Company, 22nd and Broadway; fireproof concrete and steel roofing; 97x30; $5000.

Baltimore, Md.; Globe Realty Company; J. H. Twinell, Poplar Grove and Winchester streets; one-story garage, 10x20; $10,000.

Baltimore, Md; Gilbert Liberles, 16 S. Paca street; one-story garage, 131x120; at corner Brookfield and Charmencey avenues.

Baltimore, Md.; Garrison-Walbrook Garage, Inc., 323 West Pratt street; two-story brick fireproof garage, 94x118; capacity, 100 cars.

Arlington, Mass.; Louis Levy; one-story public garage and show room, 95x150; $50,000.

Boston, Mass.; Boyd & Berry, 11 Grampian way; one-story public garage, 100x 120; $25,000.

Boston, Mass.; Carroll Construction Company, 11 Elmdale street; one-story garage, 60x342.

Brockton, Mass.; A. Montibello, one-story public garage, 45x75; $5000.

Cambridge, Mass.; M. Kozlowsky, 106 Berkshire street; one-story garage, 40x45; $3200.

Chelsea, Mass.; Daniel S. Ribock: one-story garage, 120x60 and L 60x50; $30,000.

Haverhill, Mass.; O. A. Courteau; one-story public garage, 40x100; $10,000.

New Bedford, Mass.; Thomas X. Andrews, 426 Kempton street; one-story garage and storage station, 50x80; $7000.

New Bedford, Mass.; Simon Beserasky, 1508 Acushnet avenue; one-story garage, 43x130; $8000.

New Bedford, Mass; Edward C. Earley, 21 James street; one-story garage, 38x50

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Springfield, Mass.; Moritz Ascher, 25 N. Main street; two-story garage, 49x64.

Springfield, Mass.; Springfield Street Railway Company, 500 Main street; one-story garage; $15,000.

Watertown, Mass.; J. C. Morgan, 85 Prentiss street; one-story garage, 50x100.

Worcester, Mass.; John S. Kempton, 390 Main street; one-story public garage, 54x70.

Worcester, Mass.; Dr. J. Henry Hartnett, 130 Vernon street; one-story public garage, 62x102.

Bay City, Mich.; Bay City Commercial Realty Company; two-story garage, 100x100.

Detroit, Mich.; Mrs. Emma Voss, 207 24th street; one-story public garage, 50x60; $4000.

Detroit, Mich.; McMullen Estate, 804 Union Trust building; two-story public garage, 138x106; $50,000.

Detroit, Mich.; D. H. Roberts, 1395 Fort street; one-story garage, 44.5x20; $2500.

Minneapolis, Minn.; Pure Oil Company; one-story garage, 30x38; $5000.

Minneapolis, Minn.; L. S. Donaldson, 1720 Mt. Curve avenue; two-story private garage, 28x46; $12,000.

Jackson, Miss.; A. P. Cameron, Canton, Miss.; one-story brick garage, 50x130; pressed brick front, concrete floor, composition roofing; $5000.

Joplin, Mo.; Mrs. T. Taylor, 405 Main street; two-story brick garage; $7000.

Kansas City, Mo.; Progress Laundry Company, 175 Broadway; two-story garage, 34x53; $1000.

Kansas City, Mo.; Jerry Tyree; one-story brick garage; $3500.

Kansas City, Mo.; Baird & Huselton, 1003 Waldheim building; one-story garage, 99x132.

St. Louis, Mo.; W. P. Hill, 1145 Lawn avenue; one-story private garage, 140x25; $4000.

St. Louis, Mo.; Burdeau Realty Company, 713 Chestnut street; 1½-story public garage, 45x120; $15,000.

Albion, Neb.; Eacker Auto Company; two-story garage, 44x132; $10,000.

Lincoln, Neb.; Weller Packing Company; one-story garage, 60x90; $5000.

York, Neb.; H. C. Graves; one-story garage, 50x141; $6000.

Elizabeth, N. J.; Max Fern, 10 First street; one-story public garage, 79x198; $7000.

Jersey City, N. J.; C. F. Long, 1 Montgomery street; 24 garages, one-story each, 10x20; $10,000.

Jersey City, N. J.; Klipper & Birubaum, 368 Central avenue; one-story public garage, 50x100; $8000.

Jersey City, N. J.; Tonawanda White Pine Company, 1 Madison avenue, New York; one-story garage, 40x178; $8000.

Newark, N. J.; Walter F. Hill, 202 Seymour avenue; eight private garages, one story each, 66x38; $2500.

Newark, N. J.; Gustave Schwedes; one-story public garage, 76x120; $6000.

Newark, N. J.; Mercer Realty Company; one-story garage, 34x100; $5000.

Newark, N. J.; Fairchild, Baldwin Company, Firemen's building; two-story garage and repair shop, 85x150.

Trenton, N. J.; William Murphy; one-story garage, 50x65; $5000.

West New York, N. J.; James J. Sullivan, 456 Park avenue; two-story garage, 50x96; $6000.

Albany, N. Y.; George Zwack, 128 State street; one-story garage, 20x50; $5000.

Bronxville, N. Y.; William H. Davis, 35 Nassau street, New York City; 1½-story private garage, 30x50; $6000.

Brooklyn, N. Y.; Charles L. Behlert, 161 Prospect Park, West; one-story garage, 30x100; $4000.

Brooklyn, N. Y.; Josephine Miller, 195 Park place; one-story garage, 50x116; $1500.

Brooklyn, N. Y.; Realty Associates, 162 Remsen street; one-story garage, 20x100; $2500.

Brooklyn, N .Y.; Robert H. Hill, 915 66th street; one-story garage, 40x100; $4000.

Brooklyn, N. Y.; A. J. Namm & Son, 494 Fulton street; two-story garage, 60x90; $11,000.

Brooklyn, N. Y.; Louis Oxfeld & Sons, 361 Stone avenue; one-story garage, 129x131; $30,000.

Brooklyn, N. Y.; Alco Building Company; Lee Levy, president, 44 Court street; one-story public garage, 150x125; $20,000.

Brooklyn, N. Y.; Thomas J. Walsh, 1295 Atlantic avenue; one-story garage, 49x149; $7500.

Brooklyn, N. Y.; Ralph M. Hart, 652 Jefferson avenue; one-story garage, 50x115; $12,000.

Brooklyn, N. Y.; Mable Marthing, 826 Manhattan avenue; one-story garage, 75x100; $10,000.

Brooklyn, N. Y.; R. Hendrickson; two-story garage and storage station, 25x128; $23,000.

Brooklyn, N. Y.; Rose L. Losb, 668 Park place; two garages, one story each, 50x131; $16,000.

Brooklyn, N. Y.; Walter Farslow; one-story garage, 50x52; $4000.

Brooklyn, N. Y.; I. Rosenberg, 100 Beaver street; 50x100; $15,000.

Brooklyn, N. Y.; N. W. Curtis, 2495 Atlantic avenue; three garages; one story each; 40x20; $4500.

Buffalo, N. Y.; George F. Sibbick, 273 Scheale avenue; one-story garage, 14x16.

Derby, N. Y.; Edward Michael, Brisbane building, Buffalo; two-story garage, 40x60; $20,000.

Flushing, L. I., N. Y.; Owen Borough Corporation; one-story garage, 56x178; $20,000.

Glendale, L. I., N. Y.; John Flach, 14 Gamma place; two-story garage, 20x60; $5000.

Great Neck, L. I., N. Y.; Great Neck Garage and Repair Company; one-story garage, 55x100; $8000.

Hamburg, N. Y.; Seneca Garage, Inc.; L. H. Bley, secretary; one-story garage, 50x100; $7000.

Horseheads, N. Y.; James McCleary; one-story garage and automobile salesroom, 50x70; $6000.

Huntington, L. I., N. Y.; Carsonarcutt Sales Company, New York avenue; one-story garage, 50x120; $8000.

New York, N. Y.; Edwin Bailer, 185th street and Bathgate avenue; one-story garage, 50x77; $10,000.

New York, N. Y.; Salvator Imperator, 2019 First avenue; one-story garage, 50x11; $9000.

New York, N. Y.; John W. Kavanagh, 410 East 39th street; one-story public garage, 40x75; $7000.

New York, N. Y.; Wellesley Realty Company, 280 Madison avenue; six-story garage, 36x100; $60,000.

New York, N. Y.; St. Clement's Church Corporation, 104 W. 85th street; one-story garage, 38x90; $5000. Lessee, West Third Street Garage Company, 114 W. Third street.

New York, N. Y.; John G. Wendel Estate, 175 Broadway, four-story garage, 50x90; $40,000. Lessee, Carl Shilo, 146 W. 39th street.

New York, N. Y.; Lippman & Schunfmacher, 1128 First avenue; two-story garage, 71x131; $25,000.

Rochester, N. Y.; Dr. H. E. Sperry, 1912 East avenue; two-story garage, 22x20.

Sagamore Park, N. Y.; Pavilno Gerli, 354 Fourth avenue, New York City; one-story garage; $20,000.

Southampton, L. I., N. Y.; T. Monell; two-story garage, 15x24; $4000.

Winfield, L. I., N. Y.; Anton Lascabzo, 21 Lee avenue; one-story garage, 60 x90; $9000.

Yonkers, N. Y.; B. J. Connolly, 8 Purser place; one-story garage, 23x30x100; $4000.

Yonkers, N. Y.; William Howell; one-story public garage, 50x106.

Cincinnati, O.; Beirue Brothers, Woodbarn and Brewster avenues; one-story public garage, 15x95; $5000.

Cincinnati, O.; Moore Oil Company; one story auto service station; $10,000.

Cleveland, O.; Herman J. Mark, 1506 Crawford road; one-story public garage; $1000.

Massillon, O.; W. D. Strohaker; two-story automobile sales room, 60x100.

Toledo, O.; James R. Easton, 2620 Scottwood avenue; one-story garage, 16x18x40; $2500.

Youngstown, O.; Henderson Overland Company; one-story garage and sales room; $80,000.

Pauls Valley, Okla.; F. C. Grant; two-story garage, 50x80; on Main street; brick and reinforced concrete, composition roofing, install elevator.

Beaver Falls, Penn.; Philip J. Davidson; one-story private garage, 35x40; $3000.

Easton, Penn.; Albert Santee, 12th and Jackson streets; one-story garage, 40x42; $4000.

Lancaster, Penn.; John Bair; two-story garage, 20x35; $3000.

Lancaster, Penn.; H. Schlotzhauer; one-story community garage, 103x18; $5000.

Lansford, Penn.; G. Howard Bright, 506 Penn street; one-story garage, 35x40; $40,000.

Pittsburg, Penn.; James L. Stuart, 233 Oliver avenue; two-story garage and sales room, 144x116; $50,000. Lessee, White Company.

Philadelphia, Penn.; William M. France & Son, Inc., 4437 Frankford avenue; one-story garage, 50x20; $4000.

Philadelphia, Penn.; Thorsten Y. Olsen, 108 Gowen avenue; two-story garage, 20x20; $2500.

Philadelphia, Penn.; F. G. Herring, 47 Queen street; one-story garage; $4000.

Reading, Penn.; Charles M. Maderia, 1341 Mineral Spring road; two-story garage, 25x30.

Reading, Penn.; Kemmerer & Zechmau, 27 N. Sixth street; eight one-story garages.

Reading, Penn.; William Bentz, 1203 North 10th street; two-story garage, 45x100; $10,000.

South Bethlehem, Penn.; H. A. Conahan; two-story garage, 60x110; $12,000.

Womelsdorf, Penn.; George Hicks; one story garage, 60x150.

Providence, R. I.; William H. Earle Estate; one-story public garage, 53x69; $4000.

Providence, R. I.; Thomas Grimes & Brothers, Inc.; 191 South Main street; two-story public garage, 54x80; $23,000.

Greenville, S. C.; D. W. Davenport, Greer, S. C.; one-story brick automobile sales room; 37x100; on East Washington street; composition or metal roofing, tile and cement floor.

Rock Hill, S. C.; T. A. Crawford, Jr.; one-story building, 46x100; $5000. Lessee, Reddy Reid Company.

Athens, Tenn.; Thomas Sherman; two-story automobile supply and sales room, storage station and garage, 52x84; concrete floor, elevator; $6000.

Cameron, Tex.; W. N. Chambers; two-story brick garage site purchased for $6000.

Dallas, Tex.; Buick Company, Young and Browder streets; three-story brick automobile sales room; $25,000.

El Paso, Tex.; Cadillac Sales Company, Florence and Montana streets; brick garage, service station and sales room, 130x50; $3000.

El Paso, Tex.; Jolly & Morris; one-story brick garage; $5000.

Richmond, Va.; R. F. Patterson; brick stucco garage; $5000.

Suffolk, Va.; Elliott Motor Company; one-story garage, 60x125; $10,000.

Kaukauna, Wis.; J. H. Lietz, agent for Overland car, one-story garage, 100x50; $10,000.

Lake Geneva, Wis.; Y. M. C. A. College, Williams Bay, P. O., Wis.; one-story garage, 50x140; $3000.

Milwaukee, Wis.; Wolff & Evans, 437 East Water street; two-story garage, 50x100; $15,000.

Milwaukee, Wis.; Munkwitz Realty Company; three-story garage, 60x120; $35,000.

Milwaukee, Wis.; Gillman Estate, 424 Jefferson street; one-story garage, 70x130; $10,000.

Milwaukee, Wis.; M. J. Grueschow & Sons, 1018-20 20th street; one-story garage and storage station, 24x28 and three story 35x59; $7000.

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AGENCIES RECENTLY APPOINTED.

Add to and Correct Your Mailing List—Symbol * Indicates Commercial Vehicle, † Electric, and ‡ Agricultural Tractors.

ARKANSAS.

Blytheville—‡Parrett, J. W. Brown.
Wynne—Oldsmobile, J. W. McKie Auto Co.

CALIFORNIA.

Hollywood—Oldsmobile, H. Aber, Jr.
Los Angeles—Monroe, Conwell-Hathaway Co., 1026 South Olive street.
Roamer, Alfred Penn, Jr.
Oakland—Roamer, Motors Distributing Co.
Pasadena—Roamer, Los Rolles Electric Co.
Quincy—Oldsmobile, F. C. Pazom.
San Diego—Oldsmobile, Pacific Motor Sales Co.
San Francisco—Roamer, Motors Distributing Co.
H A. L., The Eugene Schuber Co.
Santa Maria—Oldsmobile, W. H. Crakes.
Walnut Creek—Oldsmobile, A. N. Patterson.

COLORADO.

Denver—Ford, North Denver Motor Co., 2327 West Lake Place.
Ford, White Walker Motor Co., 3003-3009 Welton St.
Regal, The Wm. Thorney Auto Co.
Roamer, The Wm. Thorney Auto Co.
Leadville—Ford, C. V. Furman.
Rocky Ford—King, G. J. Lackey.

CONNECTICUT.

Bridgeport—Oldsmobile, Lyford & Ferris, 42 Black St.
Hartford—White, The Hartford Buick Co.
Stamford—King, S. N. Staub.

DELAWARE.

Felton—Oldsmobile, H. Glanville.
Wilmington—Oldsmobile, H. R. Loose, 115 Concord avenue.

FLORIDA.

De Funiak Springs—Roamer, R. E. L. McCaskill.
Miami—Oldsmobile, Stanwood Auto Co., 14th St.

ILLINOIS.

Anchor—‡Parrett, Otto W. Mueller.
Amboy—‡Parrett, C. R. Miller.
Champaign—‡Parrett, L. F. Brownfield.
Chebanse—‡Parrett, Jules Gravelot.
Chicago—Detroiter Six, The Schreuder Automobile Co., 2216 South Michigan Ave.
Roamer, Shadburne Brothers Co.
‡Parrett, A. M. Sackseder.
‡Parrett, J. W. Brown.
Dixon—‡Parrett, George Neltz.
Joliet—Roamer, Folger Adam.
Kankakee—Oldsmobile, G. W. Libbey, 166 N. Schuyler.
Kempton—‡Parrett, P. McGuignan.
‡Parrett, J. K. Woolf.
McLean—‡Parrett, C. G. Woodmancy.
Morton—‡Parrett, J. P. Roth & Sons.
Odell—‡Parrett, Frank Zebell.
Rapatee—‡Parrett, Woods Brothers.
Saunemin—‡Parrett, F. R. Allen.
Springfield—Chandler, Chandler Motors of Springfield, 158 Chestnut St.
Velie, The Bunker-Bancroft Co.
Stewart—‡Parrett, George Neales.
Streator—Roamer, L. C. Mulford.
Tolono—‡Parrett, Paul F. Mefarny.
Varna—‡Parrett, Conard Koch.
Victoria—‡Parrett, F. M. Robinson.
Warsaw—‡Parrett, Henry Dross & Son.
Winona—‡Parrett, James McGarth.

INDIANA.

Brookston—Oldsmobile, M. E. Bennett.
Crawfordsville—Oldsmobile, Shaw & Banta, 209 W. Washington St.
Evansville—King, Granlich Auto Sales Co.
Hartford City—Oldsmobile, A. W. Tindall.
Indianapolis—Metz, Wilbur Johnson Co., 724-30 North Meridian St.
‡Parrett, Kenney Machine Co.
Linton—Oldsmobile, Linton Haines Co., 167 N. Main St.
Logansport—Oldsmobile, G. S. Barnhart, 310 Market St.
Rushville—Oldsmobile, C. H. Tompkin.
Terre Haute—Oldsmobile, J. A. Miller Auto Co., 29 South Ninth St.
West Lafayette—Oldsmobile, West Lafayette Garage.

IOWA.

Adel—‡Parrett, Adell Auto Co.
Callender—‡Parrett, Van Allsen & Son.
Ida Grove—‡Parrett, Pilcher Hardware Co.
Knoxville—Oldsmobile, Bybee Auto Co.
Logan—King, Foutch & Case.
Mount Pleasant—Oldsmobile, H. G. Ruckgaber.
Oskaloosa—Oldsmobile, Central Garage and Repair Co.
Ottawa—King, Ottawa Garage.
Pella—Oldsmobile, White Way Auto Co.
Waterloo—Oldsmobile, Waterloo Auto and Supply Co., 701 Commercial St.

KANSAS.

Salina—King, I. A. Pribble.

MAINE.

Bangor—Velie, L. G. Angell.
Barth—National, The Barth Garage Co.
Portland—Saxon, The Maine Motor Car Co.

MARYLAND.

Baltimore—Oldsmobile, Auto Sales Co., Inc., 1007 N. Eutaw St.
Chestertown—King, James H. Sides.
Cumberland—Oldsmobile, Auto Tire Repair and Supply Co.

MASSACHUSETTS.

Boston—Ford, The City Point Garage, East Fourth and I streets.
Liberty, The Liberty Motor Corp.
Roamer, Alfred Cutler Morse & Co.
North Adams—Oldsmobile, M. O. Haggerty.
Taunton—Oldsmobile, Carlow Automobile Co.
Watertown—Oldsmobile, Harry Hall, 12 Watertown St.
Worcester—Ford, F. C. Dole.

MICHIGAN.

Allegan—Maxwell, Oliver Brothers.
Birch Run—Dodge, J. A. & G. H. Fothfuss and J. McGowan.
Lake City—Ford, Iverton Brothers.
Studebaker, Iverton Brothers.
Lansing—Oldsmobile, The Lansing Garage and Sales Co.
Plainwell—Maxwell, F. D. Travis.
Saginaw—*Republic, L. J. and L. R. Gardner and R. Meckel.
Waitsburg—Maxwell, Jonas & Riggs.

MISSISSIPPI.

Bogue Chitto—Oldsmobile, H. E. Brister.
Natchez—Chalmers, Porter & Claggett, 513 Main St., McClure building.
Dodge, Porter & Claggett, 513 Main St., McClure building.
Hudson, Porter & Claggett, 513 Main St., McClure building.
Vicksburg—Oldsmobile, Miller Auto Co., 1011 Wash St.

MINNESOTA.

Eden Valley—Ford, Busch & Bishop.
Minneapolis—Roamer, The Barclay Auto Co.

MISSOURI.

Kansas City—Jordan, R. W. Immasche and J. Johansen.

NEVADA.

Searchlight—Oldsmobile, James Cashman.

NEBRASKA.

Lincoln—King, Buckstaff Auto Co.
Minden—Oldsmobile, F. F. Rogers.
Seward—Oldsmobile, Babson-Dickman Co.
Tobias—Oldsmobile, Mares Auto Co.

NEW HAMPSHIRE.

Manchester—Hupmobile, Jone Stone.

NEW JERSEY.

Boonton—Oldsmobile, Ginger Auto Agency.
Paterson—Oldsmobile, Oscar Peterson.
Trenton—Oldsmobile, Motor Shop, Inc., 636 State St.

NEW YORK.

Albany—Oldsmobile, Oldsmobile Distributing Co., 292 Central Ave.
Auburn—Oldsmobile, W. S. Curtis, Inc.
Chester—Oldsmobile, Murry's Garage.
East Rockway—Oldsmobile, J. E. Jordan.
Elmira—Oldsmobile, C. W. Bishop.
Hempstead—Oldsmobile, Main Street Garage.
Hornell—Oldsmobile, S. B. McCornell.
Middletown—Oldsmobile, North End Garage.
New Hyde Park—Oldsmobile, Long Island Seed Co.
New York—Ford, Flato, Inc., Broadway and 81st St.
Roamer, H. J. Everall, Inc.
Roamer, Roamer Motor Co.
Olean—Oldsmobile, Mazza & Questa.
Richfield Springs—Oldsmobile, Simmons Brothers.
Troy—Oldsmobile, Illuim Garage, Third and Liberty Sts.
West Brighton—Oldsmobile, Short & Wasely.

OHIO.

Alliance—Oldsmobile, Central Motor Car Co.
Dover—Oldsmobile, Garage on the Square.
Elyria—Oldsmobile, G. H. Andrees.
Gibbonsburg—Oldsmobile, Deloe & Gerwin.
Grinnell—Oldsmobile, Hawkeye Motor Sales Co., 920 Main St.
La Grange—Oldsmobile, Nichols & Adams.
Louisville—Oldsmobile, Star Motor Car Co.
Mansfield—Oldsmobile, P. Gatton & Son.
Marietta—Oldsmobile, Jacob Spindler.
Massillon—Oldsmobile, Miller Brothers.
Medina—Oldsmobile, Western Missouri Garage.
Sebring—Oldsmobile, Sebring Auto Co.

OKLAHOMA.

Cherokee—‡Parrett, Bowles & Co.
Muskogee—Oldsmobile, J. F. Lyles, 409 W. Olmulgee Ave.

PENNSYLVANIA.

Brownsville—King, R. B. Theakston.
California—Oldsmobile, Duff's Garage, Wood St.
Curwensville—King, Crisman & McNaul.
Darlington—Oldsmobile, Poole & Brunkow.
Indiana—Oldsmobile, Clymer Motor Car Co.
Johnstown—Oldsmobile, Johnstown Oldsmobile Co., Haynes St.
Landsdale—Oldsmobile, Meebner-Felver Motor Co., Broad and Jenkins Aves.
Myersdale—Oldsmobile, Keystone Garage.
New Castle—Oldsmobile, W. E. Marshall.
Pen Argyl—Oldsmobile, Joel F. Batt.
Philadelphia—Roamer, A. Paul Oliver.
Prosperity—King, J. E. Andrews.
Rouseville—King, J. W. Straub.
Saltsburg—Oldsmobile, Saltsburg Motor Co.
Yukon—King, F. Shorck.
Westchester—Oldsmobile, N. Harlan Slack, 320 E. Gay St.

RHODE ISLAND.

Providence—Dort, Longley Sales Co.
Marmon, The Buick Motor Co.
Studebaker, Kenworthy-Clark Co.

TENNESSEE.

Knoxville—Roamer, H. L. Michaels.
Nashville—Roamer, R. D. Ezell Auto Co.

VERMONT.

Danville—Oldsmobile, Morrill's Garage Co.

VIRGINIA.

Bristol—Oldsmobile, Bristol Hardware Corp., 42 Moore St.
Marion—Oldsmobile, Marion Hardware Co.
Norfolk—‡Bull, Coburn Motor Co.
Petersburg—Oldsmobile, Stockdell Car Co.
Pulaski—Oldsmobile, Pulaski Motor Co.
Richmond—Oldsmobile, Oldsmobile Granger Co.

WASHINGTON.

Davenport—Chalmers, A. J. Field & Co.
Everett—Oldsmobile, L. R. Pittman, 2931 Rucher Ave.
Oakesdale—Chalmers, Linville Brothers.
Pomeroy—Chalmers, F. O. Parlet.
Seattle—Oldsmobile, Spokane Grain Co., Inc.
*Reo, Geo. L. Trotter Co.
‡Bull, Northwest Buick Co.
Spokane—Hupmobile, Eastman Car Co.
Sprague—Chalmers, D. R. Cole.
Tacoma—Velie, Mark C. Davies, 14th and A Sts.
*Reo, American Automobile Co.
Washtucna—Chalmers, Voltz Motor Co.

WEST VIRGINIA.

Grafton—Oldsmobile, Grafton Motor Car Co.
Wheeling—Chandler, The Mendal Co., 1212 Chapline St.

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Labor and Money Saving Suggestions for the Motor Car Repairman.

COUNTERSHAFT BRAKE.

(Figure 1.)

The countershaft clutch with some lathes has a faculty of keeping up an annoying and bothersome spinning after the clutch has been disengaged. Often times a piece of wood is used between the lathe casting and cones to stop this spinning. Some people still use the dangerous method of setting up a braking action with the palm of the hand. A better method than either of these, and one that puts to some service cast off junk, is as follows: Take a piece of discarded brake lining long enough to reach from the counter shaft guide rod over around the clutch pulley and hang a little below the same. Make a couple of clips of substantial sheet iron, as shown in illustration. Pass one of these around guide and fasten to end of brake lining with a

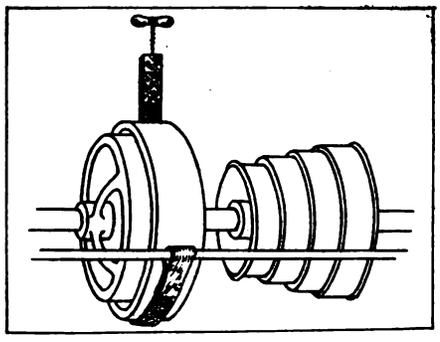

Fig. 1—Countershaft Brake.

couple of copper rivets or small bolts. Fasten the other in a like manner to the other end of the strap and make a hole in the clip just large enough to run a wire through, the end of which twist around a small pin or nail. On the other end of this wire at a convenient length fix a handle. Now when disengaging the clutch pull down on this wire and the brake lining, exercising its function as in an automobile, will effectively stop the shaft, the time required to do this depending upon the force with which the wire is pulled.

THREAD CLEANER.

(Figure 2.)

Herewith is a simple device that will be found handy in cleaning out the thread grooves in nuts that are so clogged with grease, grit or otherwise filled up that it is hard to turn on its proper bolt is here shown. It is merely a substantial piece of reasonably hard wire coiled so as to have an appreciable

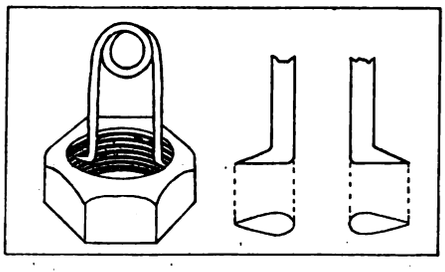

Fig. 2—Thread Cleaner.

spring in the direction of the points which are made by grinding on the emery wheel or cutting with a file in such a manner as to fit snugly and correctly in shape into the thread grooves of the nut.

FORCING BUSHINGS INTO PLACE.

(Figure 3.)

To properly fit bushings is often an aggravating job unless one has a power press or some other means of forcing the sleeve into place without the aid of a hammer. While it is possible to put in bushings with the aid of a hammer, there is always the risk of doing damage to the same by a blow struck one sided or in such a manner as to distort it. The safest way is to use some means that will force it in place with a powerful yet steady and even pressure. A simple little home made device for this purpose is shown herewith. The bushing is just started in place squarely as shown and a washer is placed against the inside of the piece to hold the bushing. Through this a bolt of sufficient length is placed, the nut of which bears against another washer placed against the edge of the bushing. By tightening up on this nut the bushing is forced into place evenly and accurately. One hand should hold the head of the bolt from turning while the other should be used to tighten up on the nut. When in place the nut is unloosened and the bolt and washers removed.

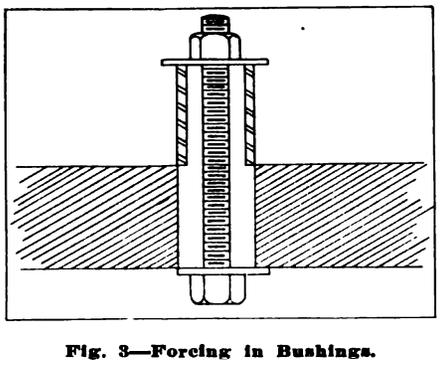

Fig. 3—Forcing in Bushings.

HOLDING ROUND STOCK.

(Figure 4.)

Holding a piece of round stock in a vise, especially when jerky or strenuous work is to be done upon it, is a thing that is always troublesome. To hold such a piece effectively some sort of sharp edged jaws are often used. A homely means of accomplishing this end is to use the jaws of a good sized monkey wrench. They are opened up enough so the round stock will fit into the space between them, but not quite as far in as the shank. The wrench is set in place against one of the jaws of the vise (preferable the one farthest from the operator) and the round piece to be worked laid against the jaws as shown in the illustration. The other jaw of the vise is now screwed up firmly against the round stock and it will be found to hold securely against the most vigorous

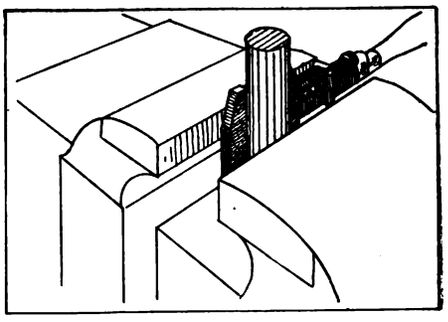

Fig. 4—Holding Round Stock.

shocks. If the piece is of a finish easily marked a piece of soft sheet brass should be placed against it at the points of contact.

MENDING A HOLE.

(Figure 5.)

A hole in a gear case, crank case or other enclosure where oil or grease is contained, may often be satisfactorily repaired by the use of a common copper and asbestos gasket, a small flat piece of iron and a bolt. To do this first drain the case and clean and smooth up the surface around the break or hole. Then find a gasket that will just a little more than cover the hole and any extending crack that might leak. Find a piece of iron about 3/16 or ¼ of an inch thick of a shape that will a little more than cover the gasket, in which position centre it and drill a ⅜ hole. Put a ⅜ bolt in this piece of iron and lay it on the gasket against the inside of the case. With suitable washers placed on outside of the case, screw the nut of the bolt up tight and the leak will be a leak no more.

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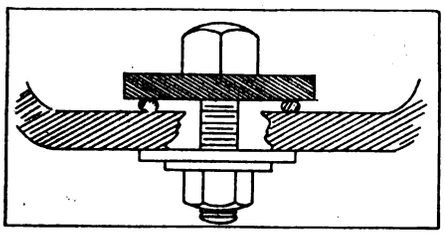

Fig. 5—Mending a Hole.

Some times it is necessary to put a gasket between the head of the bolt and the iron piece, but this depends a great deal upon what the case contains. Should it happen that the break comes at a curved portion of the case the same procedure may be followed, except that the iron piece probably would have to be fitted to conform to the interior shape of the case at point of break. In either case the gasket will take care of itself and perform its proper function. This makes a simple and reliable repair and much quicker and cheaper than taking the case down and out of the car for welding. If there is reason why the head of the bolt cannot project inside the case a flat headed bolt or stove bolt may be used, countersinking the head into the iron piece to a nice tight fit.

REMOVING CYLINDER HEAD.

(Figure 6.)

A simple and effective way of removing a detachable cylinder head—and one that will do little harm, is as follows: Probably in the junk pile can be found a piece of round iron stock about four or five inches long. For, say, four-fifths of its length cut a thread like that of the spark plug, leaving the remaining length as it is for use with a Stillson wrench, or it may be ground on an emery wheel to have a square head for use with an ordinary wrench. Remove the spark plug and in its place screw this new piece, which action will gradually raise the detachable part of the cylinder without in any way injuring the gasket. Sometimes it is effective to tap the piece gently with a hammer as soon as there is appreciable tension on the screw. This also makes a handy way of holding down the valve when removing the spring retainer.

REFITTING VALVE CAPS.

As a general rule it will be found that valve caps when cold will be covered with carbon and a gummy oil and as a result screw into place very sluggishly when being refitted. To remedy this it is often advantageous to lubricate the threads with a little paraffin. By so doing the caps can often be screwed into place down on the copper and asbestos washers with the fingers, requiring merely a final tightening with the wrench. It is always advisable to do this thoroughly, especially with the intake valve caps, not only as a guard against compression leaks, but to prevent the cap unscrewing instead of the spark plug when removing the latter.

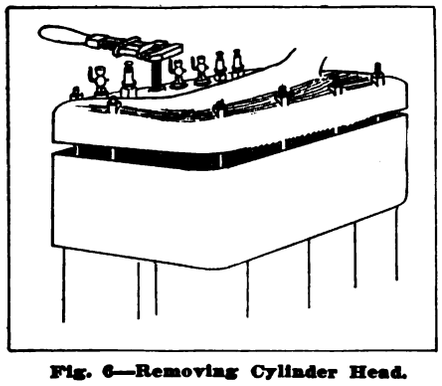

Fig. 6—Removing Cylinder Head.

CUTTING METAL TUBING.

(Figure 7.)

Anyone who has tried it knows that it is not an easy matter to cut tubing sharply and square. To make a cut at a certain angle is even more trying. A simple and easy way to do this is to drill a hole through a block of wood having square edges, of such size as to just fit the tubing to be cut. Mark out on the block a line making the desired angle with the tubing and with a hack saw cut on this line. This will make a sharp cut and give accurately the angle desired.

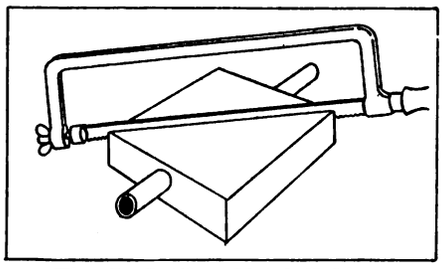

Fig. 7—Cutting Metal Tubing.

MAKING WINDSHIELD TIGHT.

(Figure 8.)

A simple means of closing the aperture existing in the type of windshield in which the upper section overlaps the lower is to set in a section of a baby carriage tire in which has been cut a V shaped groove, as shown in the sketch. The tire section should of course be as long as the width of the windshield aperture.

To make the groove is not very easy, unless a rigging is devised to hold the rubber section and provide a guide for the cutting tool. A simple jig may be made by nailing a strip of wood, about 2½ inches high, to a board, and securing a second wooden strip, whose height is one-half the diameter of the tire, parallel to the first strip and at such a distance that the tire fits snugly between the two.

The cutting tool consists of a safety razor blade fastened by screws to a small block of wood. The block should be one-half as thick as the tire, and the blade project beyond it a distance equal to the depth to which it is desired to have the radial cut.

With the tire in place and the higher strip of wood acting as a guide, the cutter is drawn from one end to the other, after which tire is given a quarter turn so that the cut comes opposite the surface of the lower strip. The second cut is then made and the cross section of the tire will then show a circle with a quarter section removed.

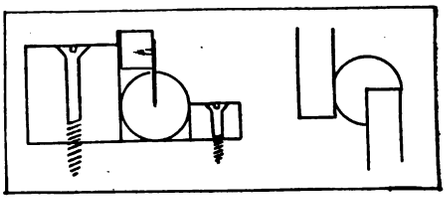

Fig. 8—Making Windshield Tight.

The notched strip thus made will not only seal the aperture in the windshield and remain in place without fastening, but will stop any tendency the glass sections may have to rattle. It can be removed easily and carried under the seat when not needed.

SPARK PLUG TESTER.

(Figure 9.)

A device for testing spark plugs without removing them from the cylinder, or disconnecting the terminal wires, may be easily made from a piece of hard fiber or wood and some copper wire. Hard fiber is to be preferred. Bore a ⅛ inch hole in a piece about three inches long and 1½ inches wide and ¼ inch thick at a point near one end and in the centre of the wide face. Cut a slot as shown in the cut. At right angles to the narrow face drill a hole, passing through the centre of the half inch hole, of a size to take a number 12 or 14 copper wire. Place the wire through this hole as shown, leaving an opening in the aperture, between the wire ends, of about half the thickness of a new dime. Bend the other ends of the wire as shown or to suit and insert in holes drilled in the end face of the block. By placing this device against the plug top terminal and the base or ground the spark will be seen in the opening. As a means of short circuiting a cylinder this device is handy, too, by connecting with a clip the gap in the opening and using as before.

A good mixture to apply to windshields consists of equal parts of glycerin and kerosene. This is applied on the outside of the windshield and will prevent rain and mist from accumulating and fogging the glass, the drops running down as soon as they touch.

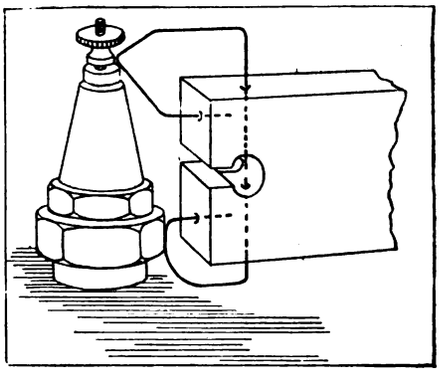

Fig. 9—Spark Plug Tester.

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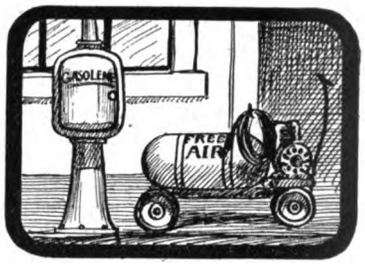
GARAGE EQUIPMENT



QUICK-CHANGE CONNECTING ROD.

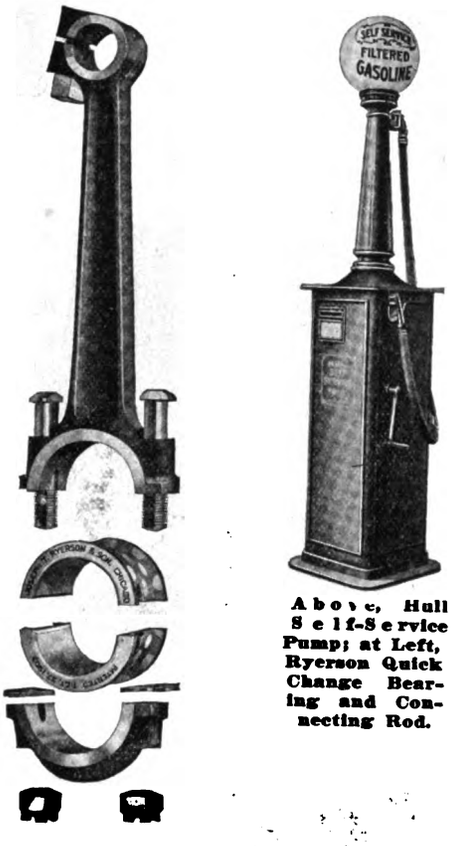
The Ryerson quick-change bearing and connecting rod for Ford cars is designed for the purpose of allowing a bearing to be installed without the necessity of overhauling the engine and to provide a bearing of the same type as in higher priced cars. The advantages claimed are ability to replace bearing without installing new connecting rod, provision of extra and inexpensive bearings that are easily carried in the car, time saved by being obliged to change bearings only, and unusual strength through the bearings being reinforced. The bearing itself is the Glyco skeleton construction, consisting of a strong reinforcement introduced into genuine babbitt. Special laminated shims are provided to be inserted, one on either side, where the halves of the connecting rod come together. They are composed of metal leaves, .002 of an inch thick, and can be peeled off when the bearings require adjustment. The connecting rod unit is made up of two forgings held together by cap screws and castellated nuts.

Manufactured by Joseph T. Ryerson & Son, 16th and Rockwell streets, Chicago. Write for prices and complete description.

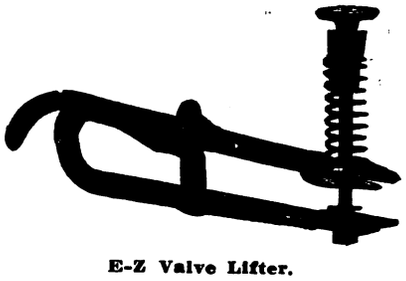
SELF-SERVICE PUMP.

An innovation in curb gasoline pumps is the Hull self-service pump. It is in the nature of a vending machine and delivers gasoline proportionate to the amount of money deposited in it. There are slots for the inserting of 25 and 50-cent pieces and also silver dollars. An indicator shows the price of the fuel each day. The mechanism is automatic and has been subjected to severe tests by numerous authorities on pumps and by large oil concerns. The cylinder is of the double acting type and the suction line is provided with Hull double foot valve. The vented discharge valve is so constructed that the valve opens to allow instant passage of the fuel the moment that pump operation starts. When action ceases the valve automatically closes, thus preventing evaporation. The pump is equipped with the Hull gasoline filter, which prevents the mixing of gasoline and impurities. Regarding the size and appearance, it is similar to other tanks of the larger type and is finished in deep chrome orange.

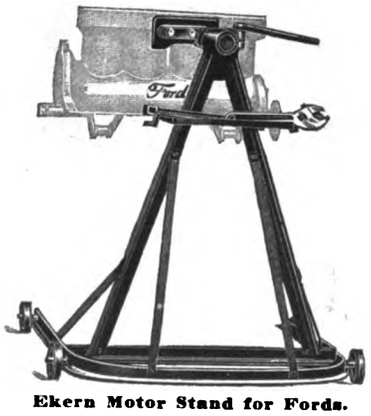
Manufactured by the Hull Pump and Tank Company, Owensboro, Ky. Prices upon application.



Above, Hull Self-Service Pump; at Left, Ryerson Quick Change Bearing and Connecting Rod.



E-Z Valve Lifter.



Ekern Motor Stand for Fords.

"E-Z" VALVE LIFTER.

This device consists of two jaws joined together in U shape form, the action being controlled by an adjustable handle and toggle link arrangement. The ends of the jaws are flattened and provided with beveled slots. These are inserted between the tappet and the washer retaining the valve spring. One throw of the handle lever compresses the spring; at the same time, being self-locking, it will retain its position. It is not necessary to remove the valve to grind it in. This tool, having a vertical lift, does not bind or lift the valve stem. It allows the free use of both hands and makes the release of the valve spring an easy matter.

Made by the Syracuse Wrench Company, Syracuse, N. Y. Price, 75 cents each.

STAND FOR FORD MOTORS.

A handy device for use in shops and garages where Ford engine work is done is shown herewith. In this stand a Ford motor can be fastened by two cap screws screwing into the side of the motor where water inlet connection is fastened. The part screwed to the motor will revolve in the clamp on the stand and can be locked by tightening the lock screw, which will hold the motor in any position or angle. It has, also, a tool tray for wrenches, tools or parts of the motor. The stand is mounted on wheels so it can be easily moved from place to place. It is 34 inches high, takes up a floor space of about 32x30 inches and weighs about 50 pounds.

Made by the Ekern Bros. Company, Flandreau, S. D. Price, $20.

SEBASTIAN LATHE.

The Sebastian 15-inch lathe is considered by the manufacturers to be the standard low price, high grade machine, and the ideal one for the automobile repair man or garage, embodying, as it does, the principal high grade features of the larger and more expensive ones. The head stock, made from special steel, is strong and solid and the boxes are of the best phosphor bronze. The cone pulley has four steps and with back gear gives eight changes of speed. The gears on head stock are covered. The tail stock is of a pattern which allows the compound rest to swing around, with room to operate the feed screw handle. It has an adjustable side movement for taper turning, heavy spindle and self-discharging centre. The bearing on the

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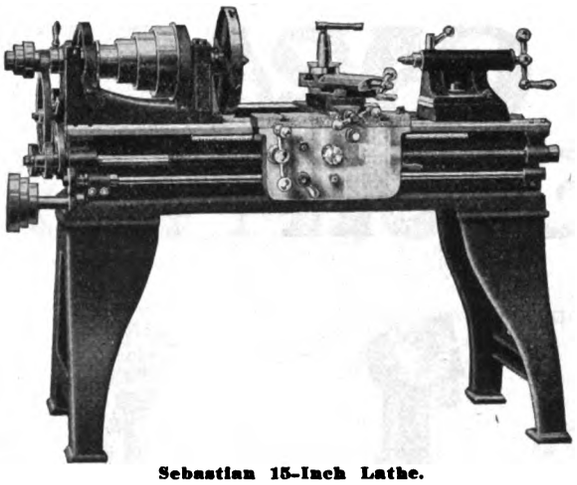
ways is long and the stock may be firmly locked. The carriage is of the most approved design, with long bearing, and is carefully gibbed to the bed, both back and front, making it rigid and substantial. T slots are arranged in both front and rear arms of the carriage. By a simple device the carriage may be clamped solidly to the bed when only using the cross feed, the feed of which is graduated to one-thousandth of an inch. The lead screw nut is made in halves, clamping over the screw when in use, and by simply raising or lowering a handle the lead screw may instantly be thrown into or out of feed. It is only necessary to use this for thread cutting, however, as there is a rod feed for ordinary work. The reverse feed and power cross feed may also be engaged or disengaged by the operation of a handle on front of the apron. A feature of this lathe is a gap in the bed next to the head, which allows the use of a larger face plate or facilitates working on pieces of large diameter, such as an automobile flywheel. This gap, however, may be filled in with a section, making the bed straight as standard. Taper attachment may be used on this lathe. The parts usually furnished consist of large and small face plate, plain or compound rest, follower rest, centres, wrenches, full set of change gears to cut from five to 36 threads and a countershaft having improved patented friction clutch pulleys. The length of the bed may be from six to 12 feet.

Manufactured by The Sebastian Lathe Company, Cincinnati, O. Circular and prices on request.



Sebastian 15-Inch Lathe.

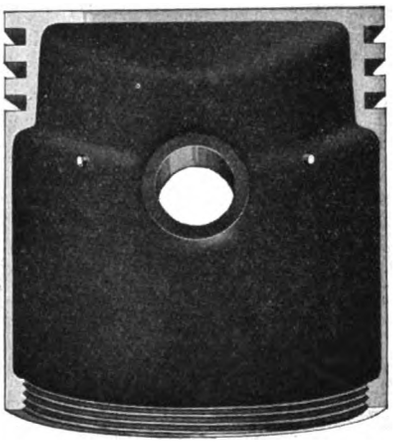
ATLAS ARBOR PRESS.

Illustrated is a type of Atlas arbor press, No. 24, which is particularly applicable for a garage or repair shop. It is designed to give ample capacity and plenty of power to perform any of the numerous operations likely to be called for in the building and repairing of automobiles. The frame is made of special analysis iron. Pinions are cut from forgings of chrome vanadium steel specially treated to withstand great strains. Rams are of nickel steel. Furnished on the press is a device for quickly locating the ram before applying pressure to the leverage. The press may be had with the legs attached for setting in a permanent location or without the legs for use on a lathe bed or bench. It has a centering capacity of 20 inches and the largest arbor size is five inches. Pressure of 12 tons may easily be obtained. The construction throughout is such as to give maximum efficiency and to stand up under all kinds of hard use.

Made by the Atlas Press Company, Kalamazoo, Mich. Price with pedestals, $80.

SEMI-STEEL PISTON.

Inspired, possibly, by the advertised accomplishments of the modern high speed motors, many owners have felt disposed to experiment a little with the motor in their car. To increase motor speed it is necessary, among other things, to lighten the reciprocating parts. The most convenient way to do this is to install pistons of some light weight material. To meet this demand a semi-steel piston has been placed on the market. This is shown in section on the cut. This piston is made of a high grade tough steel from metal patterns and combines great strength with minimum weight. It weighs about the same as pistons of aluminum alloy, but its coefficient of expansion is not as large. It is made with a re-enforced head having three ring grooves and has very thin walls, with generous bosses, giving ample bearing for the piston pins. The lower end is also re-enforced, making for great stiffness. It is claimed that this piston does not develop the side slap occurring with pistons which by their nature must fit more loosely in the cylinders. The piston may be had in a great variety of patterns and sizes.



Allen & Curtiss Semi-Steel Piston.

Made by the Allen & Curtiss Company, manufacturers of the "Simpl" tools, Mishawaka, Ind. Price and information on request.

CHAMPION GARAGE KIT.

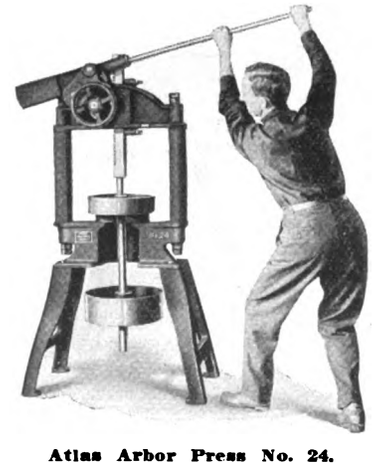
This is a complete collection of necessary tools designed to meet the needs of anyone engaged in doing work on automobiles. The complete outfit consists of one improved steel ratchet wrench, steel extension bar, offset wrench handle fitting all sockets, nine-inch thin monkey wrench, six double end engineers' wrenches milled for U. S. and S. A. E. standard nuts and cap screws from ⅛ to ¾ inches, 23 pressed steel hardened hexagon sockets, 11 pressed steel hardened square sockets, one drop forged universal joint, one double end spark plug socket, one pair six-inch combination pliers, 17-ounce combination pein hammer, screw driver and tire tool, besides a screw driver for heavy duty, a cold chisel, a punch, an "E-Z" valve lifter, an "E-Z" self fed drill ratchet and chain attachment for same and an "E-Z" cotter pin puller. All parts are carefully hardened and handsomely mottled. The tools are neatly packed in a case provided with locks and makes a handy portable outfit.

Champion Garage Kit.

Made by the Syracuse Wrench Company, Inc., Syracuse, N. Y. Price, $18 the set.

NEW BRITAIN MACHINE COMPANY.

The New Britain Machine Company, New Britain, Conn., have issued a very complete catalogue of the line of "New Britain" shop furniture manufactured in their plant, including bench legs, work stands, vise stands, bench drawers, shop shelving, bar stock racks, scraping tables, adjustable tools, polishing machinery, and many other articles that form a part of the equipment in any modern factory, shop or machinery mill.



Atlas Arbor Press No. 24.

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WIRE ROPE TOW LINE.

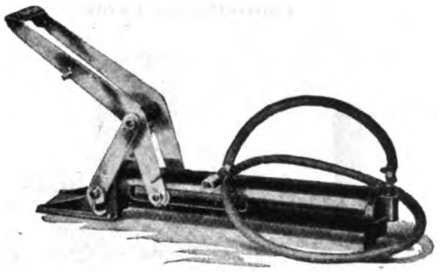
This tow line is made of steel wire rope, each end being formed into an eye-splice containing a thimble, which holds a drop forged sister hook. Capacity of the tow line is rated at about three tons and the length of the line is 25 feet. While the tow line is strong enough to pull any car out of trouble, it is light in weight and easy to handle and may be neatly packed in a canvas bag furnished for the purpose and put away in the tool box or under a seat. Included in the outfit are two Manila slings for attaching the ends so as not to mar paint or do other damage.

Made by Wright Wire Company, Worcester, Mass. Retail prices, touring car size, $3.75 complete; truck size, $6.50 complete.

Excelsior Wire Rope Tow Line, $6.50.

TWOMBLY FOOT PUMP.

This pump is designed to give greater effect with less exertion. The principle employed is that of leverage. The lever makes each downward stroke of the foot give greater force to the piston, resulting in easy downward strokes with multiple air pressure. The pump is connected to the valve by means of a special attachment which locks the pump connection to the tire valve, holding the same regardless of the amount of pressure forced into the tire. To operate the pump it is set on the ground or floor and an up and down motion exerted upon it by foot, without bending the body and without over-exertion and fatigue. Its size, 17 by 3 inches, makes it convenient to pack away in the car. There are no parts about it liable to become easily broken through regular hard work. The pump is fully guaranteed.



Twombly Foot Pump, $4.50.

Made by the Schlesinger-Redburn Corporation, 1834 Broadway, New York, N. Y. Price, $4.50 each.

APCO GRINDING OUTFIT.

A complete outfit for grinding the valves in a Ford car is now marketed by the makers of the Apco specialties. This equipment consists of a valve spring remover which permits of the use of both hands when working on a valve; a grinding tool that works as easily on the last cylinder as on the first, and a large size box of carborundum grinding compound.

Apco Grinding Outfit, 60 Cents.

Manufactured by the Auto Parts Company, Providence, R. I. Price for complete outfit, 60 cents.

VICTOR HORN.

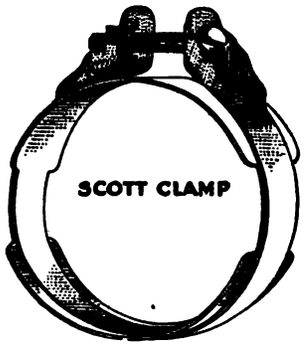
This is a low priced electrically operated horn of the vibrator type, designed to give a large volume of noise with a small consumption of current. To meet the demand for a good cheap horn it is built on pleasing lines and has a tone that is both positive and insistent, tending to clear the road instantly. It may be had in a variety of finishes, including all black, black and brass or black and nickel. It comes complete with necessary bolts, push button and 10 feet of insulated cord.

Victor Horn, $4.

Made by the American Electric Company, Chicago, Ill. Retail price complete, $4.

HOSE CLAMP.

To meet the demand for a hose clamp that will not only serve as a means of holding the hose onto its connection, but will make a perfectly tight joint as well, the Scott hose clamp has been introduced. This is made of one piece of any desired metal, coiled upon itself and making a ring of double thickness. Where the end passes through the band the width is increased so that the strength will not be weakened. The ends of the band have a stamped shoulder to retain the bolt which passing through a hole in each draws the ends together. In this clamp all tongues are eliminated, giving an equal bearing on the entire circumference of the hose. It draws together equally from both sides of the screw and buckling is prevented by the wide space under the same. It presents a smooth surface to the hose and will not cut the rubber. It opens wide and closes again without injury. It is perfectly round in form and retains its shape in shipping and assembling. It is light in weight, has unusual gripping surface and uniformly strong. Allowance is made for considerable range in any size.



Scott Hose Clamp.

Made by the Bartlett Manufacturing Company, Detroit, Mich. Prices and further information on request.

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"CONSTOLITE FOR FORDS.

"Constolite" is designed to automatically regulate the light from the Ford head lamps. It is wired from the magneto and is controlled by a switch conveniently located on the steering post. It consists of a combination of coils so perfectly balanced that it does not injure the magneto nor interfere with ignition. It is attached to the right hand side of the dash, under the hood, alongside of the terminal end of the lighting switch, and the wiring from this is run to the switch, which is part of the equipment. When installed with head lamps in multiple, this device gives, at approximate car speeds of from seven to 20 miles an hour, a light of from two to five times as much as the regular Ford head lamps and at speeds above this the output of light remains constant, giving a more uniform driving light at high speeds. With this device it is possible to dim the headlights when running at high speeds and to keep one light going should the other become disabled. The device is entirely automatic in its action and is waterproof. It is a rugged and thoroughly practical instrument, requiring no adjustments, and can be installed by anyone in a few minutes.

Made by the Detroit Starter Company, 203 Main street, Detroit, Mich. Price complete, $4.85.

UNIVERSAL SCREW CABINET.

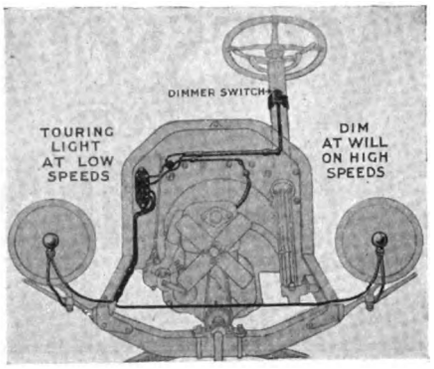
A cabinet in which to store small parts and tools is a decided business asset in any garage. The HB Universal Screw Cabinet is built of solid oak and steel, in a light golden oak finish, with either 50 or 100 drawers of one-piece semi-steel material. The height and depth of each size are the same, 32 inches high and 11 inches deep. The 50 drawer size is 22 inches wide and the 100 drawer 44 inches. The drawers are eight by three by 2½ inches, and have polished brass pulls and card holders. A cabinet of this kind will be found to prevent loss in handling screws and small parts (mixed sizes and broken packages), and any article can be found instantly. It provides an instant record of all sizes on hand, keeps the shelves clean, prevents duplicating stock and it can be used also for brads, nails, nuts, bolts, automobile accessories and numerous other small articles.

Manufactured by the Hobart Bros. Co., Troy, O. Prices: 50 drawer cabinet, $14.50; 100 drawer, $24.85. Write for literature describing other styles of office and shop cabinets and equipment.

THE CALCULAGRAPH.

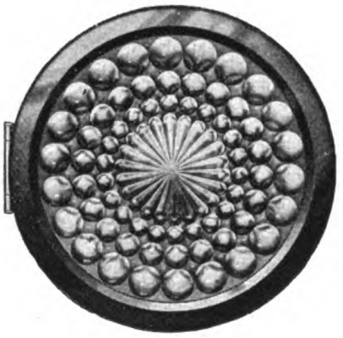
The Calculagraph is a device by means of which it is possible to learn instantly without any mental calculation or clerical work the exact amount of time any employee spends on repair or other work. It is used to best advantage in connection with some card system; a desirable sample scheme has been worked out by the manufacturer and may be had free on request. This is called booklet W. The instrument itself consists of a clock mounted in a cylindrical body inside of which is the apparatus for printing onto cards the records of the time and time elapsed. The cards are inserted in the top of the body, the printing is done by two sets of dies, one of which is divided into 12 parts, representing the hours. Each hour division is subdivided into quarters. The other die prints the minutes, it having 60 divisions. The time is indicated by arrows pointing to the figures on the hour and minute dials. When it is desired to start a record the dial only is printed on a card. When the record is again made the arrow only is printed, the resulting impressions on the card showing the time that has elapsed between the two recordings. Also there is a die that prints the time of day and the day of the month. One handle operates this die and prints the circular dials as described. A second handle is used to print the arrows. This device makes it possible to keep accurate records of more than 100 different workmen without reseting the printing dies. It may be mounted on top of a desk or on a suitable stand.

Made by the Calculagraph Company, 9 Maiden lane, New York City. Prices and description of several different styles sent upon application.

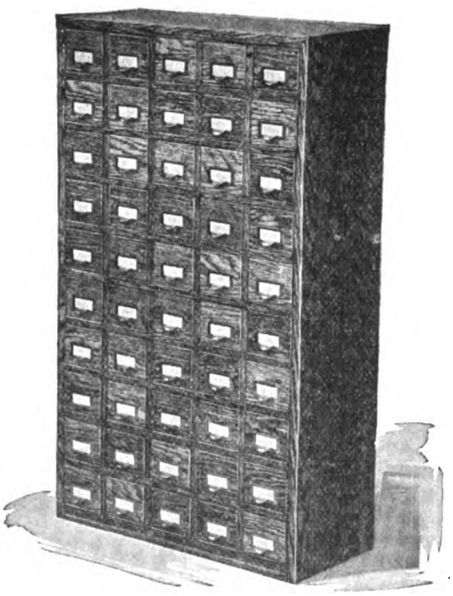


Constolite for Fords.

The Calculagraph.



Warner Lenz.



Universal Screw Cabinet.

WARNER LENZ.

The Warner Lenz is a device for the prevention of the dangerous glare of headlights. It consists of a combination of 176 lenses in one, which breaks up the beam of light, clarifies it and distributes the resultant rays in a spray which covers almost 180 degrees. No dimmer is required with lenses to conform to legal requirements. With this device the whole road in front of the car is illuminated with a soft, but brilliant light for a distance of 300 to 500 feet ahead, yet it is possible to look directly into the light without being dazzled. To install, it is simply necessary to set the lenz in place of the plain glass in the ordinary lamp. Sold under a guarantee of money back if not satisfied.

Manufactured by the Warner Lenz Company, 914 South Michigan avenue, Chicago. List prices range from $3.50 to $5 per pair, according to size, in states east of the Rocky mountains.

NEVER SKID TRUCK CHAIN.

A good traction and anti-skid device is necessary on every truck. Illustrated herewith is one which is said to more nearly meet the different requirements than most others. It consists of a number of cross pieces spaced at equal distances along the circumference of the wheel and held in place by a chain which sets in the groove of a dual tired wheel. These cross pieces are made of woven steel wire, making them unbreakable and giving a great gripping surface. Turn buckles are provided to allow for adjustment on account of wear of tires, etc. It is not necessary to jack up the wheels

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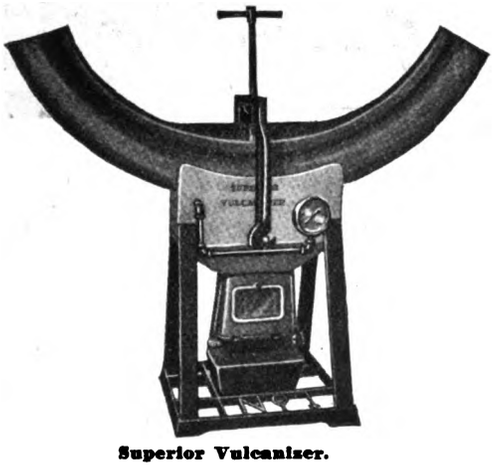
to put on these Never-Skids, and they are constructed so that they cannot foul the driving chain. Being comparatively soft and flexible they will not injure the tires or wheel. A special fitting tool is furnished with each set. They are made in various sizes and designs.

Made by the Never-Skid Manufacturing Company, 122 Liberty street, New York, N. Y. Prices and details upon request.

SUPERIOR VULCANIZERS.

Among the outstanding features of Superior vulcanizers, which are designed for both the car owner's and the repair man's use, is the simplicity of design, ease and economy of operation and the absence of rubber air bags, bead molds, solid forms, etc. The tire mold, boiler and combustion chamber are combined in one piece and are of gray cast iron tested to 160 pounds air pressure. Heat is supplied by kerosene lamp stoves of the wick type, the chimneys extending into the bottom of the combustion chamber. They are easily removable for filling, cleaning, lighting, etc., and are always under the control of the user. No gasoline is used, but when illuminating or natural gas is available suitable burners can be had for the use of either of those fuels. Two inch steam gauges, with dials graduated to read from zero to 100 pounds pressure are supplied. The clamps and pressure plates furnished with the outfit are made of cast iron and of ample size and strength. The pressure bags, made of canvas, are filled with granulated heat treated clay that will not pack and will prevent the heat from being wasted. Two sizes of bags are supplied, one for casing work and a smaller one for inner tube repairs. The machines are finished in black and aluminum; the steam gauges are nickel trimmed. Three sizes are made, No. 1 (for three or 3½-inch casings), having 13 fluid ounce capacity; No. 2 (for four-inch and larger), 35 ounce; baby (for same sizes as No. 1), nine ounces. No. 2 outfit takes a two-burner lamp, while the others are provided with one-burner type and all are shipped completely equipped.



Superior Vulcanizer.

Manufactured by the Superior Vulcanizer Co., 16 Fulton avenue, Rochester, N. Y. Prices: Baby model, $10; No. 1, $15; No. 2, $25. One dollar extra for gas burners on baby and No. 1. Write for further particulars.

MARTELL ALIGNING REAMER.

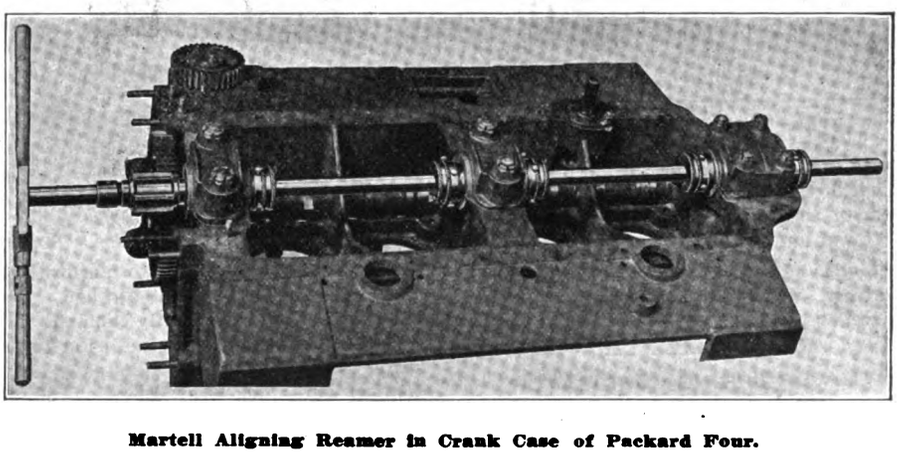
The Martell reamer shown in our illustration is known as the aligning type, and is for use in reaming a series of bearings where accuracy of alignment and bearing sizes are essential. It not only makes for accurate work, but effects a saving of from 50 to 95 per cent. in time over the old method of hand scraping. It is excellent equipment for any repair shop, providing facilities equal to those of large factories, and can be operated by any workman familiar with bearings and the use of a micrometer.

Never-Skid Truck Chain.

The Martell aligning reamer not only produces perfect working surfaces in exact alignment with each other, but makes possible the correct meshing of gears. It is equally adaptable to work on connecting rods and other bearings, and can be used on any automobile engine. In the illustration it is shown in position in the crank case of a Packard Four engine ready to ream No. 1 bearing.

The Martell reamer is made in two sizes, No. 1 having a range of from 1¼" to 1⅝" and No. 2 from 1⅝" to 2¼". No. 1 set includes one reamer head with three sets of blades, measuring 1¼", 1⅜" and 1½" in diameter; the total expansion of each set of blades is ⅛" above the diameters specified. No. 2 set has two reamer heads, each having three sets of blades, the smaller head blades being 1⅝", 1¾" and 1⅞" and the larger 2", 2⅛" and 2¼". These blades, contrawise to the No. 1 set, have contraction of ⅛" below the diameters mentioned. If required 2⅜" blades can be supplied at small additional expense.

In the No. 1 set there are five supporting bushings and one short and one long shaft. No. 2 set has six supporting bushings and a short and a long shaft. The supporting bushings are provided with a very fine thread pitch on the tapered portions and screw firmly into the ends of the bearings to be reamed. They are provided with means for adjusting in any direction, the range being about .095 inch. They also have micrometer reading to show the amount of "set," and it is as easy to ream .02 as .002 inch.



Martell Aligning Reamer in Crank Case of Packard Four.

Manufactured by the Taft-Peirce Manufacturing Company, Woonsocket, R. I.

NEW G. T. D. CATALOGUE.

The Greenfield Tap and Die Corporation of Greenfield, Mass., has issued a new catalogue, styled "No. 37," which contains the entire line of the corporation, and takes the place of the old divisional catalogues of the following companies: Wells Brothers Company, Division No. 34; Wiley & Russell Manufacturing Company, Division No. 36, and the A. J. Smart Manufacturing Company, Division No. 3.

The catalogued line includes illustrations and prices on taps, dies, screw plates, reamers, gauges, threading machines, tap and die holders, friction tap chuck, the new "gun" tap, pipe threading tools, etc.

An interesting and descriptive pamphlet called Bulletin Catalogue No. 216 has just been issued by the Templeton, Kenly & Co., Ltd., of Chicago and London. This describes the various jacks made by the concern and shows with illustrations the many and varied uses to which they may be put. To those desiring something better than the ordinary jack with its restricting limitations, this pamphlet should be valuable.

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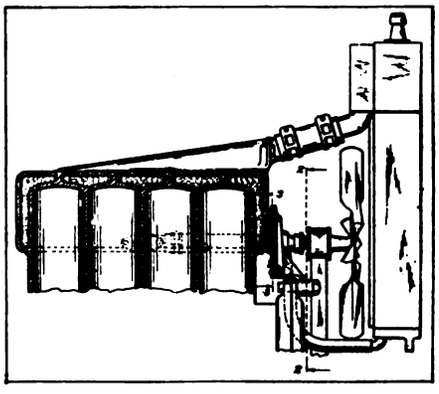
WATER PUMP FOR FORDS.

A new and useful accessory for Ford cars is a centrifugal water circulation pump. While applicable to all Fords, it is especially attractive to Fords used as delivery vans, as it is these that are most susceptible to overheating troubles. It consists of an efficient centrifugal type pump attached to the front gear cover in combination with the fan, taking the place of the arm which now carries the latter. It is driven by the fan belt and provides for the adjustment of the same exactly as at present. The only alteration necessary is to change the present fan spindle for one somewhat longer, which is part of the pump. It is made of machined castings and has a long bearing lubricated from the end and also an efficient packing gland to prevent water leakage. The capacity of the pump is rated at from 10 to 15 gallons a minute, increasing the efficiency of the motor and preventing overheating with its consequent loss of power. As the fan is driven by belt and the pump is connected with the fan, it is an easy matter to disconnect the same should the pump freeze up, thus preventing damage



Water Pump for Fords, $4.85.

to it. The position of the pump directly back of the fan gives it all the cooling effect of the latter. It is only a matter of a few minutes to fit it.

Made by the Hughes Bull Company, Detroit, Mich. Retail price, $4.85 complete.

MAJOR SPRING LUBRICATOR.

The Major spring lubricator is intended to be applied to cars that already have no provision for keeping the springs lubricated. It consists of a case to be wrapped around the springs, enclosing them in a dust and water proof covering and keeping them also encased in a bath of lubricant, which is contained in the case. The action of the spring every time the leaves move draws more of the oil between them, thus at all times tending to make the leaves slide on each other on a film of oil. The lubricator prevents rust and gives the effect of springs in a constant state of newness.

Made by the Major Manufacturing Company, 461 Pearl street, New York, N. Y. Retail prices for Ford, $12; for five-passenger car, $20; for seven-passenger car, $25. For larger cars and trucks in proportion.

Major Spring Lubricator, $12 to $25.

CREW LEVICK DISPLAY STAND.

This is a novel stand furnished for the display of oils and greases in show window or on counter. It is attractively finished in red and black enamel and has a compartment suspended on two uprights in such a manner that it may be rotated to show the color and body of the oils. The lubricants are contained in four four-ounce sample bottles and consist of light, medium, heavy and extra heavy oil, called grades A, B, C and D respectively. In the base are three sample glass jars containing the greases essential for the proper lubrication of a car, viz., gear compounds, cup grease and spring grease.

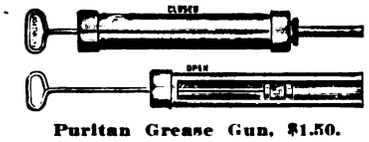
Lubricant Display Stand, Free.

The jars have screw tops to facilitate the close examination of the grease. Both bottles and jars are neatly labeled. This stand, a business getting addition to any store, is one of the many helps given to dealers who stock Crew Levick products, which include Mistokleen and Grease-in tubes.

Furnished by the Crew Levick Company, Philadelphia, Penn.

PURITAN GREASE GUN.

The outstanding feature of the Puritan quick filling grease gun is the removable inner tube and plunger, which allows the person using the device to scoop up the grease or fill it in any other way that is most convenient. Our illustration indicates the operating principle clearly. The maker makes claim to wide range of application, rapidity of action and cleanliness of operation.



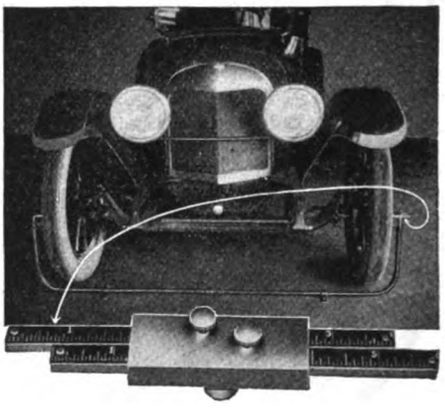
Puritan Grease Gun, $1.50.

Manufactured by the Puritan Manufacturing Company, Bridgeport, Conn. List price, $1.50.

AUTO WHEEL CALIPER.

The Bowden auto wheel caliper is made in the form of a U shaped gauge or caliper arm with necessary base feet to stand upright. At the top of one arm there is an adjustable finger for ready and simple contact against wheel on one side of the car, while on the other there are two graduated rules or gauges held in adjustable position in a metal case. To test the wheel alignment the gauge is set up and the distance between the wheels at their rear is measured and set on one scale. Then the same is done at the front end of the wheels and the other scale set. The difference of the reading of the two scales shows the amount the wheels are out of line.

Made by the Multiform Sales Company,



Auto Wheel Caliper, $12.

1926 South Wabash avenue, Chicago, Ill. List price, $12.

HAND-I-WASH.

Hand-I-Wash is a combination of soap, water and towel, combined in such a way that it can be easily carried, takes up very little space and sells at a price within the easy reach of every automobilist. It contains a full roll of best quality absorbent paper towels, and a tube of specially prepared washing liquid to be used without water, made from high grade vegetable oil and producing an abundance of lather. It cleans quickly without injury, leaving the skin in a clean, soft, and healthy condition, preventing chapping. It is also antiseptic and healing in the case of cuts and bruises. Hand-I-Wash is also applicable as a means of locating punctures in a tire by pumping up the inner tube and applying liquid to the surface.

Manufactured by Tay-Miller Manufacturing Company, Philadelphia. Penn. Price complete, $1; refillers, consisting of towel roll and tube of liquid, 50 cents each.

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FEATHERWEIGHT PISTONS.

The maker of Featherweight aluminum alloy pistons declares that by substituting Featherweight pistons, which weigh only four pounds per set, for the iron pistons of the Ford motor, which weigh 12 pounds a set without rings and pins, there is obtained a gain of eight pounds in favor of the Featherweight pistons. This means a saving of a tremendous loss of power otherwise wasted with the standard iron pistons, the loss being at a rate of 350 tons per hour when operating the car in high gear at 20 miles per hour. It means a big reduction in vibration with the consequent saving of wear and tear on connecting rod and crankshaft bearings and throughout the whole chassis. The pistons, rings and pins are guaranteed to be properly designed, accurately machined to proper sizes and made of the highest grade of aluminum alloy piston metal, identical with that used by racing drivers. The pistons are fitted with individually cast rings of sufficient hardness to give maximum life and resiliency, yet not hard enough to score the cylinders, the tension being such as to absolutely prevent oil and compression leaking past. The use of Featherweight pistons insures decrease in vibration, fuel consumption, carbon deposit and repair bills, and an increase in speed and flexibility.

Manufactured by the Featherweight Piston Company, 11 Guyman way, Pittsburg, Penn. Ford type in four sizes with rings and pins, $20 a set; Dodge type, any size required, with rings, $25 per set.

LITTLE GIANT SCREW PLATES.

The maker of the Little Giant tools for automobiles has an unusually large and high grade assortment. On this page is shown the No. 311 tap and die assortment, which eliminates the expense of buying a separate outfit for each thread standard and the consequent duplication of stocks and tap wrenches. The thread system conforms to the S. A. E. and the United States standards, and every die is contained in its own collet. The cutting halves of the dies are held in a three angle or wedge grip, making it impossible for them to tilt or get out of alignment. Increasing the pressure only tightens the grip of the collet upon the working parts of the dies. The die is reversible in the collet, permitting cutting from either the guide side or the face of the die, as desired. No. 311 outfit has five cutting sizes, ranging by sixteenths from ¼ to ½ inch. The stock is 14½ inches long and the dies contained in two-inch diameter collets. Also supplied is an adjustable tap wrench, U. S. standard taper taps and S. A. E. standard plug taps. With this assortment also comes a bit brace die holder for use in merely running over a slightly battered thread without removing the bolt or screw from its place in the car.

Manufactured by the Greenfield Tap and Die Corporation, Greenfield, Mass. List price of No. 311 combination assortment, $18. Particulars concerning other Little Giant tools supplied upon request.

L SOCKET WRENCHES.

One of the most exasperating and difficult jobs in repair work when the right tools are not available is to remove a nut that is close to a wall. A tee handle type wrench is useless. A special tool that is designed especially for this class of work, and one that will be found a great time and labor saver, is the Walden-Worcester L socket wrench. It can be used for general garage work as well, and many experienced repair men prefer it to the ordinary tee handle type. Our illustration shows the complete No. 400 set and the range of sizes in which the wrenches are made.

Marketed by the Walden Manufacturing Company, 60 Commercial street, Worcester, Mass. Price of set, $4; single wrenches, 45 cents.

Components and Sizes of the No. 400 Set.

CAR-GAS.

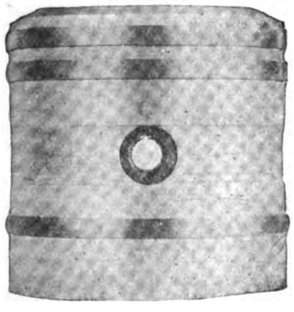
This article is said to enrich the mixture, remove carbon already formed and prevent further deposits and at the same time effect a saving of 25 per cent. of the gasoline. It is guaranteed to contain neither acid nor other ingredients that can injure the motor or carburetor and to prolong the life of the engine by removing and counteracting the carbon in the motor. Among the claims set up for this article are easier starting, quicker acceleration, better lubrication, longer motor life, increased mileage and power and the elimination of carbon troubles. It is used by mixing with the gasoline in the proportion of one quart to 160 gallons of gasoline.

Made by the Car-Gas Company, Pittsburg, Penn. Price, $1.50 per quart.

FAWSCO FUSE ASSORTMENT.

The Fawsco Commercial Fuse Company has made up an assortment of fuses that combines maximum merchandising value with minimum investment. This move is one of the intelligent endeavors of the maker and the distributor of these fuses to meet the dealers' demands for adequate assortments without tying up considerable capital. Two assortments are offered, the first containing 100 pieces with a retail value of $11.40 and the second 200 pieces, aggregating a retail value of $21.60. The margin of profit for both dealer and jobber is liberal and every retailer or wholesaler of automobile accessories should investigate the proposition. Full details are supplied upon request.

Distributed by J. H. Faw, Inc., 41 Warren street, New York, N. Y.



Featherweight Aluminum Alloy Pistons.

Little Giant Tap and Die Assortment, Set No. 311.

Fawsco Fuse Assortment.

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ACCESSORY SALESMEN to sell as side line on a strictly commission basis, excepting on Pacific Coast and S. W., an unguaranteed line of automobile casings, inner tubes and reliners. The only line sold on a basis of actual manufacturing cost. An unusual price proposition. Address P. O. Box No. 67, Morrisville, Pa.

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Binghamton, N.Y. | Birmingham, Ala. | Boston, Mass. | Bridgeport, Conn. | Brooklyn, N.Y. | Buffalo, N.Y.
Cedar Rapids, Ia. | Butte, Mont. | [illegible], N.J. | Charlotte, N.C. | Chattanooga, Tenn. | Chicago, Ill.
Chicopee Falls, Mass. | Harrp[illegible] | [illegible] C. | Cincinnati, Ohio. | Cleveland, Ohio.
Columbia, S.C. | [illegible] | Houston, Tex. | Columbus, Ohio.
Davenport, Ohio. | [illegible] | Dayton, Ohio.
Denver, Colo. | [illegible] | Des Moines, Iowa.
Detroit, Mich. | [illegible] | Duluth, Minn.
Eau Claire, Wis. | [illegible] | Elmira, N.Y.
Erie, Pa. | [illegible] | Evansville, Ind.
Fargo, N.D. | [illegible] | Fort Wayne, Ind.
Fresno, Cal. | Galesburg, Ill.
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Greenville, S.C. | Harrisburg, Pa.
Hartford, Conn. | Hastings, Neb.
Indianapolis, Ind. | Kansas City, Mo.
Lima, Ohio. | Lincoln, Neb.
Los Angeles, Cal. | Louisville, Ky.
Lowell, Mass. | Lynn, Mass.
Marinette, Wis. | Mason City, Iowa.
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Minneapolis, Minn. | Newark, N.J.
Minot, N.D. | New York City.
New Orleans, La. | Oklahoma City, Okla.
Oakland, Cal. | Pasadena, Cal.
Omaha, Neb. | Philadelphia, Pa.
Peoria, Ill. | Pittsburg, Pa.
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Portland, Ore. | Raleigh, N.C.
Quincy, Ill. | Richmond, Va.
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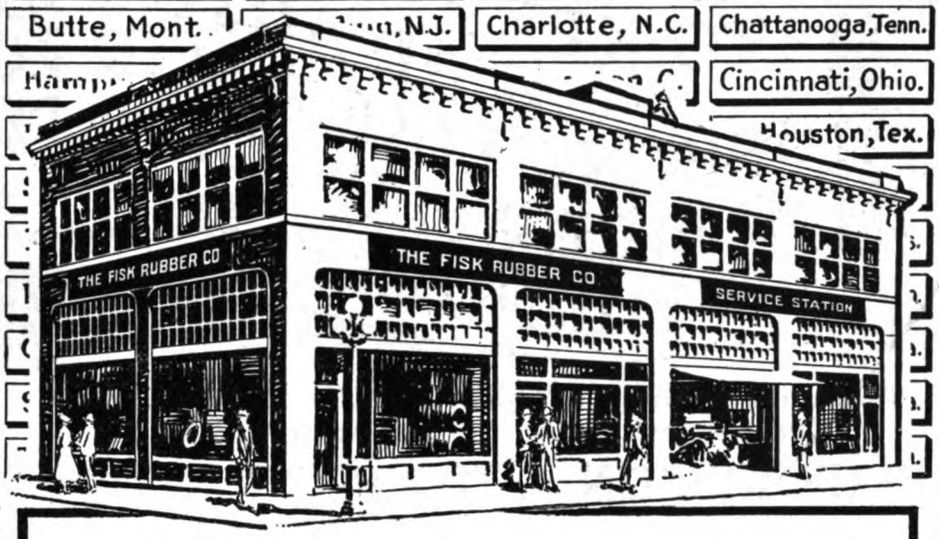

The Remarkable Growth of the

FISK

Direct Branch Organization

IN 1899 there was no Fisk Branch System at all — now there are more than 125 direct Fisk Branches in leading cities throughout the United States, the most extensive and by far the most complete organization of the kind in the country.

Fisk Dealers, by replenishing their stocks from these convenient and nearby branches, are assured of a prompt and satisfactory service not otherwise obtainable.

Those dealers who are not familiar with the many other advantages in selling Fisk Tires are invited to communicate with Dept A for interesting details.

THE FISK RUBBER COMPANY
of N. Y.
Chicopee Falls, Mass.

Rochester, N.Y. | Sacramento, Cal. | Saginaw, Mich. | Salt Lake City, Utah | San. Francisco, Cal. | San. Jose, Cal.
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Springfield, Ill. | St. Joseph, Mo. | St. Louis, Mo. | St. Paul, Minn. | Syracuse, N.Y. | Tacoma, Wash.
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TO KEEP THE BODY OF YOUR AUTOMOBILE SHINING LIKE A MIRROR USE BLUE RIBBON AUTO BODY GLOSS AND FURNITURE POLISH

Absolutely contains no WAXEY or GUMMY substances.
Does not coat the surfaces and catches no dust.

BLUE RIBBON AUTO BODY GLOSS

is a scientific "tonic" which revives and renews all highly finished, varnished and enamelled surfaces. It keeps the finish flexible and full of life, which prevents the original gloss from becoming dead or dull looking.

WAX and GUM preparations simply coat the surface. The coating soon becomes dead. Then it cannot be removed. This ruins the original gloss and finish. Lastly, repainting and refinishing is the only remedy. Ask any expert or practical painter or chemist.

BLUE RIBBON AUTO BODY GLOSS cleans, renews and repolishes or revives the ORIGINAL FACTORY GLOSS.

Ask Your Jobbers or Dealers or Write Us.

INTERNATIONAL METAL POLISH COMPANY, INDIANAPOLIS, IND.

Manufacturers of the Famous Blue Ribbon Polishes and Soaps.

UNIVERSAL TRUCK ACCOUNTING SYSTEM

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It affords every detail of time and work of any number of machines, the labor, operating cost, revenue and earnings, with comparisons for any period, in one record book and day card for each truck.

The simplest and most comprehensive record ever conceived, adaptable for use with any method of house bookkeeping or independently, that can be made to serve as part of any method of accountancy.

The most intensely practical system of accounting ever devised, that can be maintained by a girl clerk and which has no limitations.

When you know the exact cost of truck operation and what is earned through the use of any vehicle, you have data of the greatest practical value.

Detailed information at request. When writing state number of trucks in use.

The Motor Truck

TIMES BUILDING ***PAWTUCKET, R. I.***

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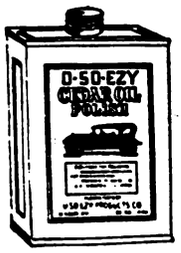
BEARINGS SERVICE COMPANY

GENERAL OFFICES - - - - DETROIT, MICHIGAN
Branches in all Principal Ci ies.

O-SO-EZY THE PERFECT CEDAR OIL POLISH

Standard equipment of each new car shipped by Abbott-Detroit, Briscoe, Buick, Chalmers, Chevrolet, Detroit Electric, Detroiter, Dixie, Empire, Grant, H. A. Lozier, Haynes, Hupmobile, Interstate, Jeffery, King, Maxwell, Oakland, Oldsmobile, Overland, Paige-Detroit, Reo, Saxon, Scripps-Booth, Stutz, Willys-Knight and Winton.



A Million New Users a Year. Are you getting your share of this profitable business?

Ask for our introductory offer with free "Silent Salesman."

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264-268 Jefferson Ave. DETROIT

First Prize and Gold Medal—Highest Award—Panama Pacific Exposition, San Francisco.

SOLD ONLY TO THE TRADE

THE MARTIN LINE

Tire Covers, Radiator Robes, Inner Tube Cases, Water-Buckets, Engine Robes

All jobbers and dealers should send a sample order. Do it before you stock your 1917 line. **Quality, prices and discounts are not met by any other manufacturer.**

No catalogue is complete unless the Martin Line is shown and listed.

Send today for latest circulars and discount sheets.

THE MARTIN MANUFACTURING CO.

LANCASTER, OHIO

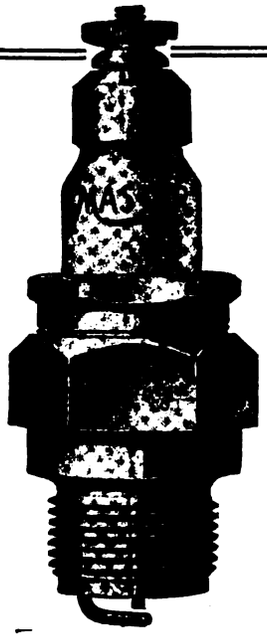
Automobile Mailing Lists 1916

28,108	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
8,122	Ford Dealers, price $17.50, or $3 per M by states.
235	Ford Dealers, Canada, $1.50.
28,482	Auto Garages, price $40, or $2.50 per M by states
29,306	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
45,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
940	Auto Supply Jobbers, price $4 for the list.
4,093	Auto Tire Dealers, price $3 per M.
2,404,150	Auto Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.
643,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

Write for particulars of any list you want.

A. F. WILLIAMS, Manager,

Phone Franklin 1192. 164 West Adams St., CHICAGO



Master Calorite Regular Length $1.00 Each Retail

A DISTINCTIVE HONOR

A signal honor has been conferred on

MASTER

Calorite Spark Plugs

by the Post Office Department of the United States

They have specified Master Calorite Spark Plugs for use in the Postal Service during the coming year—

The motor car equipment of the Postal Service is huge—
The mails must move quickly and on schedule—
Expensive delays cannot be tolerated—
So the Post Office Department is safeguarding the service from delays by using MASTER CALORITE SPARK PLUGS to eliminate ignition troubles and to keep all the cars in the Postal Service in constant, efficient, trustworthy operation—

THESE POINTS OF SUPERIORITY

of Master Calorite Spark Plugs were impressive enough to merit this award—Master Calorite Spark Plugs—are insurance against delays in delivery schedules. A hot fat regular spark is certain in every cylinder of the engine—assuring a sweet running motor and keeping the car on the road—in constant operation—Without the annoyance of broken or fouled insulators—Carbonized or burned points—Leakage of compression—thro or around the plugs. Master Calorite Spark Plugs are backed by the manufacturers with a broad guarantee.

"We guarantee MASTER CALORITE SPARK PLUGS against defects of material or workmanship, and will replace, free of charge, any CALORITE insulators broken by heat, which are returned to us transportation prepaid."

Six styles—½" regular, ⅞" regular, Metric, Model F for Fords and Reos, ⅞" long, ½" long.

Retail prices, $1 and $1.25, depending upon the type.

Attractive display stand in four colors, 14x20", is now ready for aggressive dealers stocking Master Calorite Spark Plugs. If you have Master Spark Plugs in stock and have not received your Display Stand, write for it at once.

MASTER CALORITE SPARK PLUGS
Made in U. S. A.

Manufactured and guaranteed by

The Hartford Machine Screw Co.

502 Capitol Avenue, HARTFORD, CONN.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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The reason why they send for me;
I have a Bay State Autokit you see.
A specialist and expert I became;
That's why I get both work and fame.

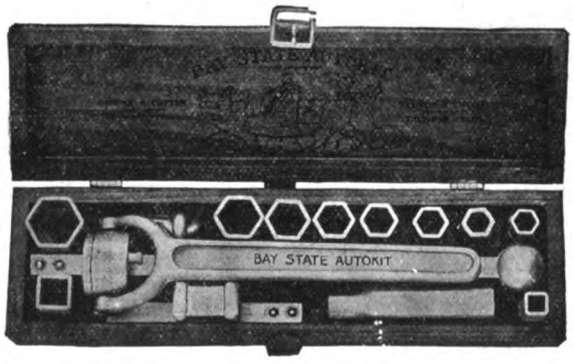
A BAY STATE AUTOKIT PERMITS ANY REPAIRER TO BECOME AS BIG AS HIS JOB.

He can select from the set just the right wrench to fit any nut or bolt on any pleasure car or truck.

The swivelling, reversible ratchet handle and shank included in the Bay State Autokit makes the use of other wrenches and makeshift tools unnecessary and permits the repairer to reach work in any place and from any angle.

Bay State Autokits are time and labor saving tools. They are designed and made for hard service and will last for years in any usage.

When the repairer's standard is good work, easily and quickly done, then the Bay State Autokit is the best investment that any garage, machine or repair shop man can make.



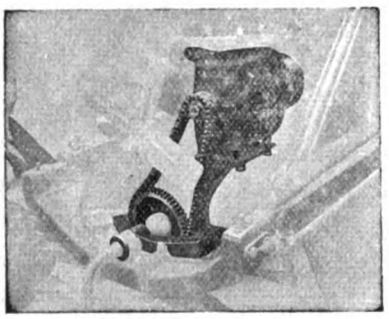
Set No. 1, 31 Sockets - - - $10.00
Set No. 2, 12 Sockets - - - 7.50
Set No. 3, 11 Sockets (For Ford Cars) - 4.00

Jobbers and dealers, car owners and trade interests of all kinds, are now buying special tools in large quantities. There is a Bay State Autokit that will meet every need.

Send today for catalogues and latest trade literature.

GEORGE A. CUTTER
SALES AGENT
Taunton Mass.

ELECTRIC
DISCO
SYSTEM



Electric Starting and Lighting Systems for FORDS $75

IT SPINS THE MOTOR

There is ALWAYS a start in the Disco, no matter how cold the day. It doesn't merely turn the motor, it SPINS it.

The Disco is a single unit system, simple, light and compact. It operates with a 12-volt current, insuring a start every time. Its patent yoke bracket maintains perfect alignment and eliminates chain breakage. It is easily accessible, and does not interfere with the accessibility of the Ford engine.

Eighteen American cars are using the Disco as regular equipment. We have a proposition to make to owners, dealers, jobbers and manufacturers. Early requests for territory will be given preference.

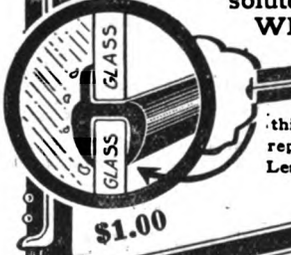
Write or Wire Today

Disco Electric Starter Corporation
DETROIT, U. S. A.

McCORMICK ALLMAND WEATHERSTRIP

"Stops that Leak thru the Windshield"

Closes space between panes, making it absolutely RAIN, DUST and WIND-PROOF.



Adjustable to any thickness of glass. Easily removed or replaced. Does not obstruct vision. Less than half inch wide.

$1.00

Write for dealers' proposition
THE ROBINSON MANUFACTURING CO., Inc
501 Lincoln Bldg. Louisville, Ky.

Repair Tires—Make Money

Don't continue to plod along and be content with just a storage business with occasional sale of gasoline and oil. The garage that is making money today is the one that is vulcanizing tires with a

SHALER VULCANIZER

You don't have to go out and solicit business. The auto owner when he comes to you for supplies, gasoline, oil, etc., and knows you can repair his tires, will give you the job.

Give your customers this complete service they like, be ready to repair their tires, make money for yourself.

Anybody who can clean or adjust a car can operate a Shaler because of the simplicity of **Shaler Wrapped Tread Method** and **Automatic Heat Control.**

Catalog Free Send at once for the new Shaler catalog, the most complete Vulcanizer Catalog ever published. Get the low discount price for the Shaler garage type pictured here. We will also send you our book "Common Sense about Tire Repairs" for garages only.

C. A. SHALER & CO., 265 Fourth St., Waupun, Wis.
The Largest Manufacturers of Vulcanizers in the World

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STOP THE SPRING BREAKAGE

TYPE B

It's a poor policy to risk repeating the annoyance of a broken or weak spring—and the delay—by saving only a very little in buying or selling a **cheaper** spring instead of a "NEW ERA **BETTER** SPRING."

Don't replace a broken spring with one no better.

Wise dealers—sell only the best—

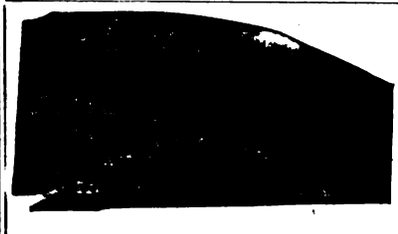
New Era **BETTER** Springs are the oldest and largest used line for replacement—at same price as from car factories. Made for all cars, GUARANTEED one year against breakage or sagging, graphited between leaves for two years' lubrication.

Write for complete lists, discounts—or state requirements and class of business.

New Era Spring and Specialty Company

877 Woodward Ave., Detroit, Mich.

Ask for 16-page catalog—of popular priced "BETTER" Accessories, Shock Absorbers, Bumpers, Indestructible Sparking Contacts, Ford Accelerators, Gasoline Reserve Valves, Fender Braces, Switch Coil Locks, Rear Compartment Locks, etc.



KENNEDY AUTO STORAGE COVERS

Furnish efficient and economical protection for cars in dead storage. They are made of heavy, durable paper, in standard sizes to fit any cars.

MADE ONLY BY

THE KENNEDY CAR LINER & BAG CO.
SHELBYVILLE, IND.

Featherweight Aluminum Alloy Pistons For Ford and Dodge Motors

Featherweight Alloy Pistons are lighter than pure aluminum, weigh two-thirds less than cast iron, give more speed, reduce vibration, save fuel and, make a four run as smoothly as a six.

Ford Type, in four sizes, $20 per set, with rings and pins.

Dodge Type, any size required, with rings, $25 per set.

IMMEDIATE DELIVERIES

Featherweight Piston Co.
11 Guyman Way PITTSBURGH, PA.

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Jenkins Vulcan Spring Co.,
1402 Chestnut Street, St. Louis, Mo.

Gentlemen:—Please send proposition on agency for VULCAN springs.

Signed_____

Address_____

The Pioneer Auto-matic Gas Saver

More Mileage **More Power**

AEROFRAM Gas Saver

The Simplest and Most Efficient of All Gas-Saving Devices—Effects a Notable Improvement in Engine Performance—Anybody Can Install It in Ten Minutes—For All Cars.

Absolutely Automatic—Nothing to Adjust

Dealers: The Aerofram actually does the work that more expensive gas-savers claim to do. When you offer it to your customer you do so with the certainty that he cannot duplicate its efficiency with any other device at ten times the price. It will positively add two to six miles per gallon—in many cases more. Hundreds of users have testified to this. Write for details. Liberal selling terms.

Price in Canada $1.50

$1 The Aerofram Co. $1

107 Massachusetts Avenue. Boston, Mass.

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WILMO
Gas Saving Manifolds

The WILMO vaporizes all the remaining gas particles right at the valve openings, therefore makes your car run smooth at all speeds.

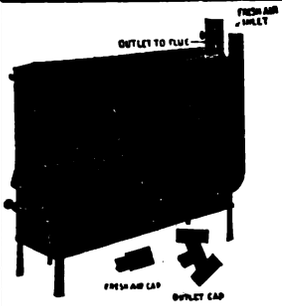
SOLD BY ALL DEALERS

Gillette Motors Company

KING C. GILLETTE, President

MISHAWAKA, - - - - - INDIANA

Successors to Wilmo & Amplex Co.



A "SUPERIOR" or "COSY"
Safe Garage Heater

Will heat any garage safely and well so owner can use his car all year 'round and keep it in best condition.

Dealers Make Money Selling These Heaters and Incidentally Increase Their Other Sales.

WRITE FOR TERMS, ETC.,

Superior Manufacturing Company

N. S., PITTSBURGH, PA.

Add to Garage Profits by Oxy-Acetylene Welding

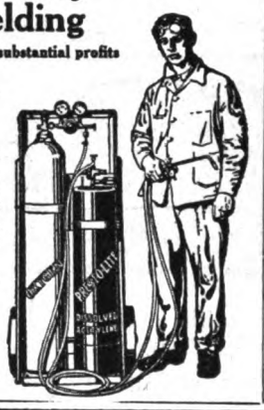
Savings made please your patrons and pay good substantial profits

PREST-O-LITE

Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for $60.00. (Canada $75). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.



The Prest-O-Lite Co., Inc.
The world's Largest Makers of Dissolved Acetylene.
309 Speedway, Indianapolis, Ind. — Canadian Office and Factory, Merritton, Ontario

THE
ACME

Ford Steering Controller

PRICE COMPLETE, $3.50

The ACME STEERING CONTROLLER is a simple and substantial Accessory, of practical value to all Ford Car Owners.

By the pressure of two coil springs acting upon the tie rod, the car automatically tends to a straight course, regardless of holes and obstructions, thereby relieving the strain of driving.

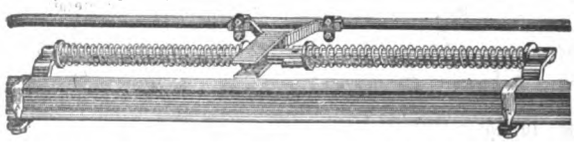
The ACME STEERING CONTROLLER is the only practical steering device for Ford Cars on the market. As proof of this not 1% of those sold to date have been returned. However, the Manufacturers stand ready to take back and make refund to the dealer for any machine returned.

It is easily seen from the description what the device will do, and the Ford Car Owner readily buys because of its simplicity and apparent effectiveness.

Have the device in stock and be in line for sales.

Be the first dealer to introduce the ACME STEERING DEVICE in your territory, and gain this advertising advantage.

Write to your jobber or to us for the discount to dealers.



ACME STEERING DEVICE CO., Mfrs., 1223 Filbert St. Philadelphia, Pa.

FEDERAL
Double-Cable-Base
TIRES

FOR

"Extra Service"

FEDERAL RUBBER MFG. CO.
MILWAUKEE, WIS.

The Manley Garage and Machine Shop Equipment

Designed and built to give economical, dependable service. Time and labor saving equipment that permits automobile repairer to do any size job right and quickly.

Air Compressors ***Portable Cranes***
Arbor Presses ***Screw Presses***

Our complete line is fully described, illustrated and priced in our catalogue. Every jobber, dealer, garage and repair shop man should have a copy. Free at request.

UNITED ENGINE AND MFG. CO.
HANOVER, PA.

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Harvey RACINE

Boltless Auto Springs Are Best for Replacements

because they mean absolute, lasting positive satisfaction to the car owner—regardless of the make of his car.

Harvey Springs are the result of the best spring manufacturing brains in America. They are made of finest selected steel and the plates are scientifically formed and tempered on the Harvey Patented Machines which make them with an accuracy and uniformity not possible to obtain with hand labor. They are

Guaranteed From End to End

No Hole At Center—No Weak Spots Anywhere

There's a Harvey Boltless Auto Spring for every make and model of car and we carry over 15,000 springs in stock at the factory for quick shipment. Harvey Springs are also carried in stock by the jobbers whose names are shown in list herewith. Order from nearest point to avoid delays.

FREE

The 1916 Harvey Spring Book is the most complete ever published. It contains a complete list of prices for over 600 of the leading makes and models of cars—gives sizes, weights, measurements, prices, etc. Dealers, garagemen and repairmen need this book. We mail it free.

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Abilene, Tex.,	Ed. S. Hughes & Co.
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Baltimore,	Henry Keidel & Co.
Billings, Mont.	Northwestern Auto Sup. Co.
Birmingham, Ala.,	Drennen Motor Car Co.
Bluefield, W. V.,	W. H. Harry & Co.
Charleston, S. C.,	Cameron & Barkley Co.
Chattanooga,	Southern Auto Supply Co.
Chicago,	Maremont Mfg. Co.
Cincinnati,	Wheel, Top & Hdw. Co.
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Dallas,	Ferris-Dunlap Auto Sup. Co.
Danville, Va.,	Piedmont Hdw. Co.
Denver,	M. L. Foss
Duluth,	Kelley Hdw. Co.
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Ft. Wayne, Ind.,	Mossman, Yarnelle & Co.
Hutchinson, Kan.,	The Auto Supply Co.
Kansas City,	The Bonniwell-Calvin Iron Co.
Knoxville, Tenn.,	C. M. McClung & Co.
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Little Rock,	Rose-Lyon Hdw. Co.
Louisville,	Geo. Dehler, Jr.
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Milwaukee,	Shadbolt & Boyd Iron Co.
Minneapolis,	Williams Hdw. Co.
Monroe, La.,	Monroe Hdw. Co.
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Peoria,	Cummings & Emerson
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Toledo,	The Roberts-Toledo Auto Co.
Washington, N. C.,	Harris Hdw. Co.

Harvey RACINE

The Harvey Spring Co.

851 17th Street Racine, Wis.

10

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LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

FREE AIR SERVICE CURB STANDS

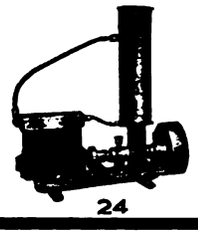
Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. Save Money.

LIPMAN AIR APPLIANCE CO.

199 Pleasant St., BELOIT, WIS.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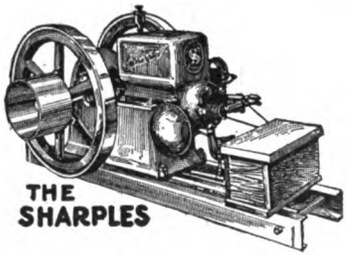
60

2-Sparks—Quick Starting

You'll find our Double-Ignition engine **very** easy to start. It has two complete, separate sparking systems, like the best foreign automobiles. **Either** spark will run the engine. **Both** sparks can be used for starting. This makes the engine practically trouble-proof. Magneto is not affected by water—will run in the pouring rain without missing.



SHARPLES DOUBLE-IGNITION

Gasoline Engine is solidly built for heavy duty. Mounted on non-decaying steel skids. Gasoline tank in lowest part. Gasoline can never drain out. It's drawn up by **suction-feed.** Endorsed by fire underwriters. Hopper cooled. Speed can be instantly changed by shifting lever. Double inspected and **guaranteed forever.** Four sizes 2½ to 9 H. P.

Our contract offers big opportunities for the live dealer... WRITE US.

The Sharples Separator Company

Also Sharples Milkers and Sharples Separators

WEST CHESTER, PA.

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MOSCO

Mosco Valve Grinder

List Price $1.50

A positive, accurate, quick and easily operated valve grinder. A perfect machine, as easily operated as any hand tool. Anyone can use it and do the highest grade work, and obtain a superior finish on valve seats.

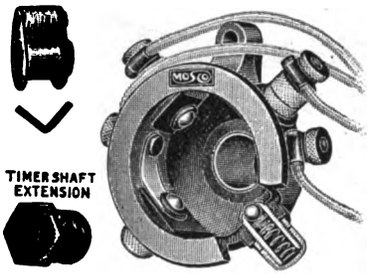
To operate, the handle is pulled, which rotates the tool and valve; a spring on chain pulley pulls in the opposite direction, which reverses the rotation of the valve.

It easily fits in the tool box. For repairers it is a time and labor saving tool. When ordering state make, model and year of car or motor.

BEMUS BALL CONTACT TIMER

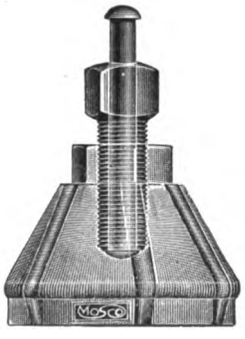
FORD CAR TYPE

List Price $2.50



The remarkable service giving qualities of the 1915 Bemus Timers have even been further improved in the 1916 model. With top wire connections, offset balls, extra long non-wearing roller and reinforced arm. This makes the present model the perfect timer and an attachment that the jobber and dealer can sell with entire satisfaction to all buyers.

MOSCO WHEEL PULLER



A loose plunger wheel puller, for Ford, Overland, Buick, Maxwell, Saxon and Chevrolet cars. A powerful one-man tool with long service life and one that will save time and labor.

It sells at a price with discounts that will interest all the trade.

WRITE FOR THE LATEST MOSCO CATALOG AND TRADE DISCOUNT SHEETS.

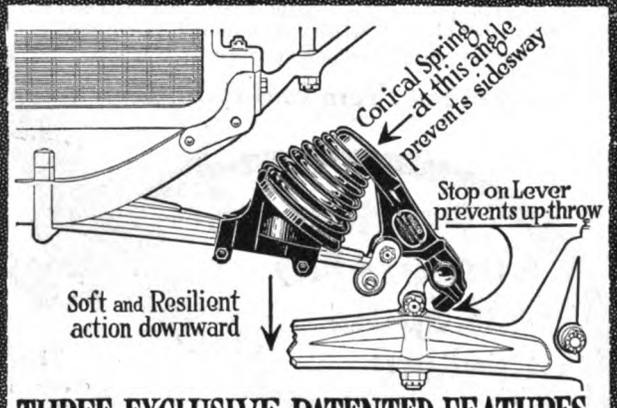
Motor Specialties Co.

WALTHAM MASSACHUSETTS

HASSLER

Shock Absorber

— For FORD Cars —



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"Recognized as the Best"

— 100000 FORD OWNERS RECOMMEND IT —

WRITE FOR DEALERS TRIAL SET PROPOSITION

$15 for a Set of Four

Robert H. Hassler, Inc.
Indianapolis, Ind.

EQUIP YOUR CAR NOW WITH A

Crane

PATENTED

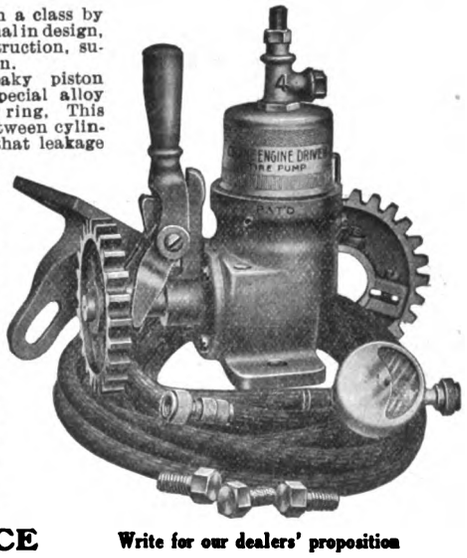
Engine Driven Tire Pump

The Crane is in a class by itself. It is original in design, different in construction, superior in operation.

Instead of leaky piston rings it has a special alloy patented packing ring. This is so arranged between cylinder and piston that leakage is impossible and oil is prevented from getting into the compression chamber.

The result is 97% efficiency instead of 65%, and the pumpage of air into the tires that is free from oil spray.

The Crane is the only engine-driven pump of which this can be said. It is also quick in action, small, compact, light weight, well lubricated and easy to attach.



PRICE

$8.00 Complete

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BAY STATE PUMP CO.

Boston, Mass.

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An adjustable, detachable mirror for C. S. Giant Searchlight.

Black or Nickel Finish
Each $1.50

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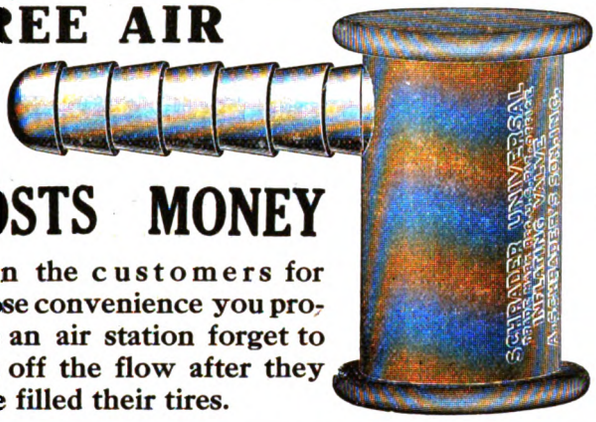

COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Automatic Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.
Made to fit any diameter of hose from 1-4 in. to 5-8 in.

PRICE ONE DOLLAR

Manufactured by

A. SCHRADER'S SON, Inc.
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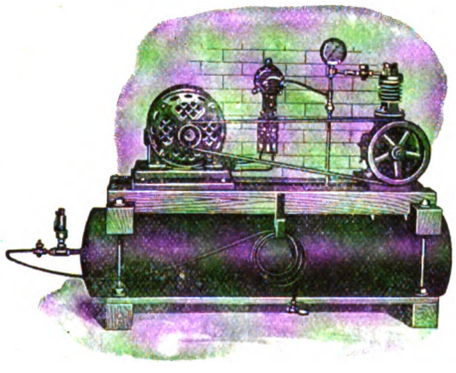
Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

GARDNER

STATIONARY FREE AIR UNIT



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SERVICE ECONOMY DEPENDABILITY

A Gardner Outfit of this type installed in *your* garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

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STEVENS & CO. NEW YORK

AN IDEAL GARAGE PUMP

THE STEVENS COMPOUND PUMP No. 99

A genuine compound pump of highest quality, with brass cylinder bases and ground valves, it will pump to 180 pounds pressure or more.
Simple and strongly constructed, it will last and remain in good order for years.

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"HOLDFAST" PUMP CONNECTION

It can be instantly attached or removed and is made for long service-Cannot blow off while pumping.

No rubbers to replace. The Holdfast is the only satisfactory connection for continuous garage service

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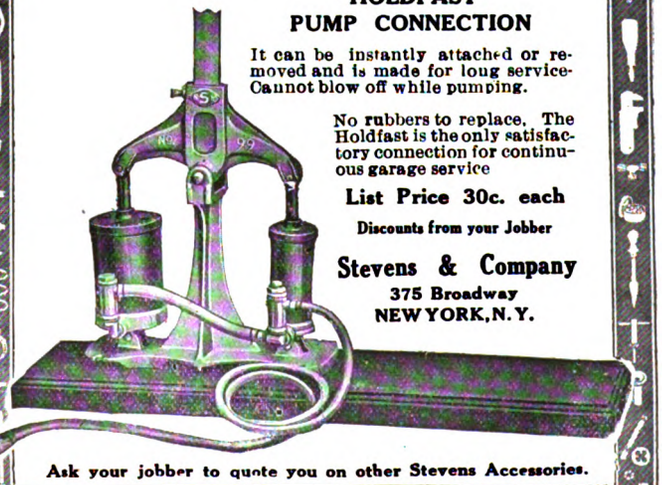

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375 Broadway
NEW YORK, N.Y.

Ask your jobber to quote you on other Stevens Accessories.

MANUFACTURERS OF
Automobile Parts & Accessories

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Johnny Aitken, winner of the Astor Cup Race, as well as the winners of practically every big race held this season

USES

DIXON'S GRAPHITE Automobile LUBRICANTS

exclusively

WHY?

Because the fine flake graphite in these lubricants forms a durable veneer over the microscopic roughness that exists in all bearings and gears.

Fine flake graphite prevents metal-to-metal contact, thereby practically eliminating the cause of friction. The result is a smooth running car that travels farther and faster on each gallon of gas.

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Made in Jersey City, N. J., by the

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Autoists recognize the difference between ***serving*** and just ***selling,*** and are satisfied accordingly. You know what satisfaction means—larger sales—more customers—greater profit.

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Gasolene and Oil Handling Devices

Insure ***service*** in connection with this end of your business and therefore satisfied customers.

Stop to consider whether your present methods of dispensing gasolene and lubricating oils are as profitable as they should be—if not, drop us a line.

Full information furnished without obligation on your part.

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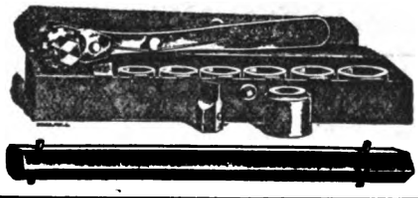
SALES OFFICES IN ALL CENTERS REPRESENTATIVES EVERYWHERE.



DON'T USE A COLD CHISEL

USE THE LANE UNIQUE RATCHET WRENCH

FOR CLOSE AND DIFFICULT WORK

IT TURNS NUTS VERY CLOSE TO THE WALL.

is easily and quickly reversed, sockets will not break or split and fits three standards and automobile nuts.

MADE FOR HEAVY SERVICE

Wrench is machine made. Sockets are turned from steel bars, cold broached and case hardened. Fully warranted. Every repairman should have a UNIQUE RATCHET WRENCH SET.

SPECIAL SETS FOR FORD CARS

Dealers, Jobbers and Garagemen, Write for Trade Discounts.

STANDARD SET Contains:
1 Handle 7 inches in length.
2 Screw driver bits.
7 Sockets to fit semi-finished hex. nuts as follows:
U. S. Standards from 1-4 in. to 1-2 in.
A. L. A. M. Standards from 5-16 in. to 11-16 in.
Cap screw heads from 5-16 in. to 5-8 in.
Price in leather case $2.50.

THE FORD SET Contains:
1 Handle 7 inches in length.
2 Screw-driver bits.
1 Extension bar 7 in. in length.
SIX SOCKETS to fit all nuts and bolt heads on Ford car, including the cylinder head.
Price in leather case $3.00.
Sold by dealers everywhere.

WILL B. LANE, Manufacturer, 180 N. Dearborn Street, Chicago, Ill.

You can make anywhere from $1500 to $3000 a year above expenses. Your investment to start is small, returns are quick and income cash. Profits are large on every job. The Tire repair business is growing every year. Every city and town offers opportunity for you. Buy only an

AKRON-WILLIAMS TIRE REPAIR EQUIPMENT

The better your equipment, the better your work and the greater your volume of business. Start right. Use equipment which is

Endorsed by 30 Leading Tire Manufacturers We are making an unusual offer to everybody who buys our equipment. You can become a tire repair expert by our plan.

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The Automobile Journal

A magazine that is read by more than 20,000 car owners every issue.

It Will Interest You—

Send for sample copy. Times Bldg., Pawt., R. I.

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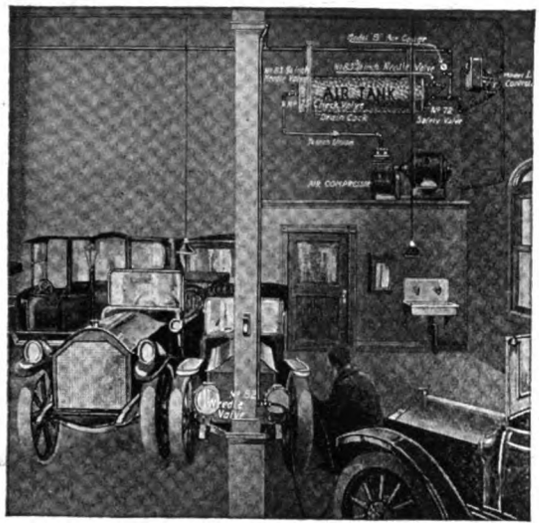

A Brunner Automatic Air Compressor Outfit in Your Garage, and a Brunner Air Sign on Your Garage Would Bring You the Trade of the Brunner Wise Motorist.

Mr. Garageman, you cannot afford to overlook the trade of the Brunner wise motorist. He has been following the Brunner Sign for three years and patronizes the garages displaying the Brunner Sign for the reason that Brunner Service means just as much to him as clean gasolene or reliable tires.

The Brunner Automatic is a Money Saver and Will Return You Full Value for Your Investment With Interest

because it takes just about ten minutes of one man's time to care for and operate this machine a week—figure up just how much time your men lose now starting and stopping your air compressor and keeping their eye on the gauge to see if there is sufficient pressure for your customers' needs. Then figure how much time you could save each week with an automatic outfit that would keep the air pressure in your tank up between 115 and 140 lbs. day in and day out with absolutely no attention aside from an occasional oiling. The Brunner Automatic would save that difference for you.

Mr. Garageman, the Brunner Air Compressor has been making good in the garage ever since the garage business has been a business. When the Brunner was first put on the market the garage air compressors could have been counted on the fingers of one hand—today they could not be counted on the legs of a centipede. The fact that the Brunner has survived competition without end and that there are more Brunners going into the garages today than there are compressors of any other make should be convincing proof that the Brunner is right.

Let us send you our No. 13 catalogue, also our Garageman's Handbook on Compressed Air and the name of the Brunner jobber covering your town.

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One of the few staple and practical trucks on the market.

Our selling policy and proposition is the most liberal ever offered to the trade.

One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
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MOTORISTS HAVE LEARNED

That they get purer, cleaner gasoline; get all they pay for and get it quicker from

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That's why they pass up all others whenever it's possible to reach a WAYNE—That's why a WAYNE would make business and money for you.

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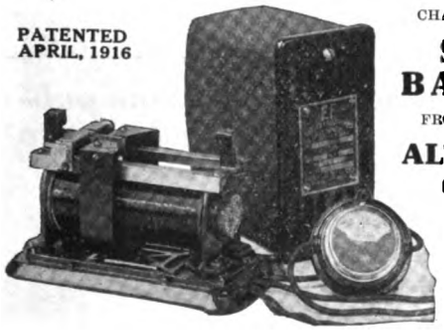
PATENTED APRIL, 1916



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ALTERNATING CURRENT
Full Wave Type
60 Watt Output
$15, Complete
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THE FRANCE MANUFACTURING CO., Cleveland, Ohio
Jobbers and Dealers Throughout United States and Canada

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BOULEVARD ROADSTER

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Four-Cylinder Motor,
3 1-8 x 4 1-2, en bloc
Cantilever Springs
110" Wheelbase
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ELECTRIC AIR PUMPS

FREE AIR SERVICE ATTRACTS CUSTOMERS

This pump costs you little either in money, time or trouble.

It does away with necessity for storage tanks (although it can be used with them), stationary compressors and heavy truck outfits.

Light in weight, easily handled, inexpensive, it does the work easily, cleanly, perfectly and more quickly than *more expensive* pumps many times larger in size.

Pressure of 125 lbs guaranteed without overheating. Runs equally well on alternating or direct current.

Automatically lubricated—no liquid lubricant or oil level to maintain. Draws only pure cool air to the tire.

Automatic pressure gauge attached. Apply thumblock, let gauge register pressure in tire—then turn on switch and fill to requisite pressure.

Fully guaranteed.

Prices $45 to $80. F. O. B Baltimore, Depending upon style and size.

Including gauge, high pressure hose, attachment plug, quick-acting coupling and long electric cord.

Lectroflater air pumps possess many desirable features not found in other pumps. Write for more descriptive literature regarding different sizes and styles.

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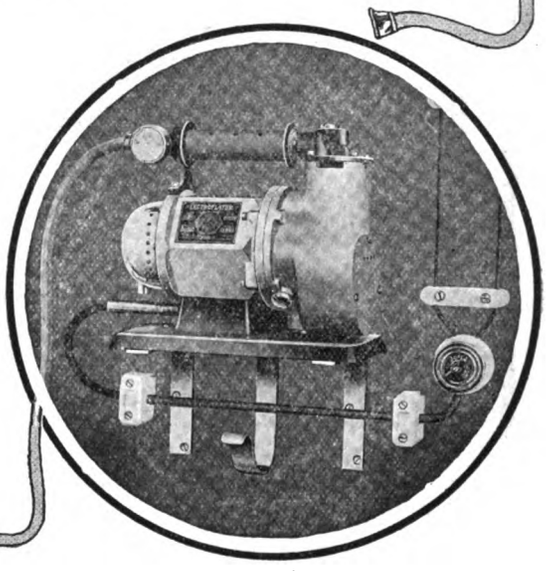

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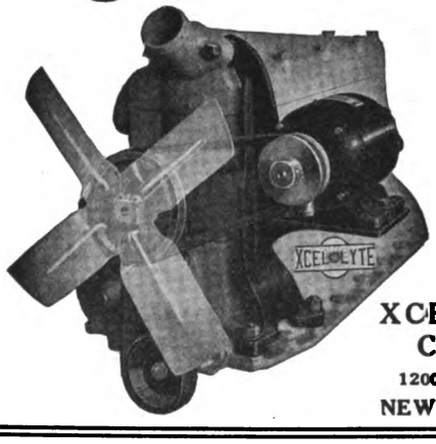

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BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
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so you won't have to turn away profitable repair business, or turn it over to the machine shops.

With the WHITNEY you can handle the work right on the spot. You can avoid delays; you can accommodate customers.

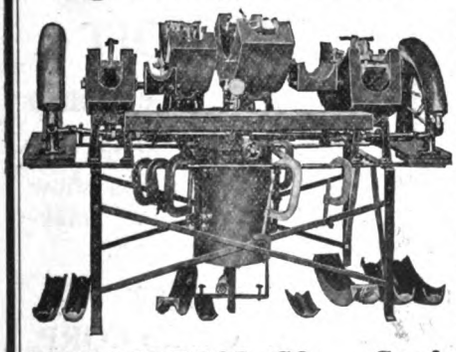
The WHITNEY will measure up to about any milling job you'll be called on to do in the line of auto repairing. With it you can cut gears, sprockets, cams, do key-seating, straddle milling, profiling, slotting, slabbing and hundreds of other operations.

Simply drop a postal for catalog No. 3

THE WHITNEY MFG. CO., - - Hartford, Conn.

CHAINS-KEYS-HAND MILLING MACHINES

Big Money Double Treading



Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch inclusive.

VANDERPOOL CO., Springfield, Ohio
and 1044 S. Main Street, Los Angeles, Cal.

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The bearings used in electrical accessories may not determine the quality and value of those accessories. But—to the motor-wise—it is worthy of note that the makers of the most dependable ignition apparatus, lighting generators and starting motors use "NORMA" Bearings to guard against bearing failures.

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BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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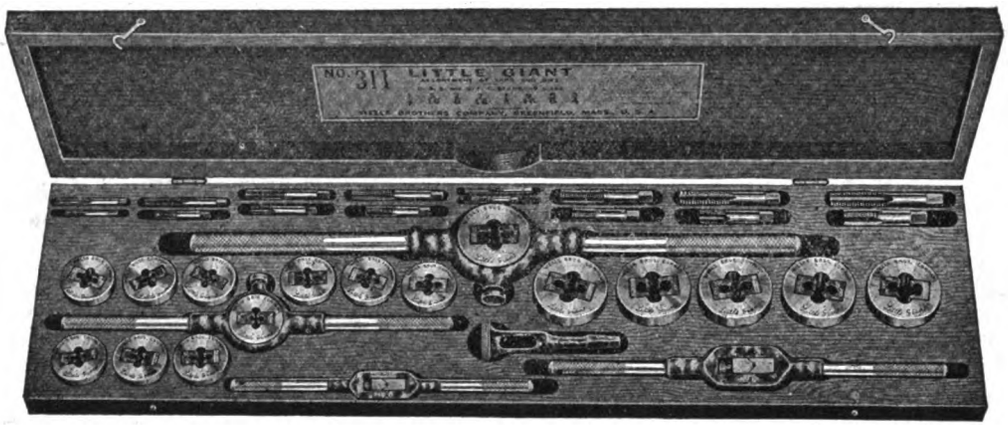
Both United States and S. A. E. Standards



These assortments are particularly valuable in the automobile repair shop where a considerable amount of threading is done. Each die is contained in its own collet and is adjusted to size. There is also a Bit Brace Die Holder for cleaning up battered threads in hard-to-get-at-places.

Every need of the manufacturer, the garage and repair man, or the car owner who makes his own repairs, for tap and die assortments can be supplied from our big line.

Send to-day for the circulars "Tools for the Automobile" "First aid in the up-keep of the Automobile".

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New York Chicago Philadelphia Galt, Ontario

Time Savers
For Charging Storage Batteries

HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.

Made of steel—lead plated—may be used over and over again.

No. 13-A—¾" spread of jaws.
No. 21-A—1½" spread of jaws.

Your money back without quibble if not entirely satisfied.

Single Lots, Each 15c Lots of 10, Each 12 1-2c Lots of 100, Each 10c

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Mabey's Dry Heat Electric

GLUE POT

No flame; no soot or smoke. All danger of fire is eliminated.

Capacity	Price without cover
1 qt.	$ 9.50
2 qts.	11.00
3 qts	12.75
4 qts.	15.75

Century Automobile Cigar Lighter, Complete $1.00 Each, F. O. B. Indianapolis.

DEALERS—Write For Prices.

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Will pay for itself in a few days

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Vulcanizer

Be independent. Do your own Vulcanizing.

SUPERIOR'S are simple, efficient and inexpensive.

They do all kinds of repairs on casings and tubes

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SUPERIOR VULCANIZER CO.

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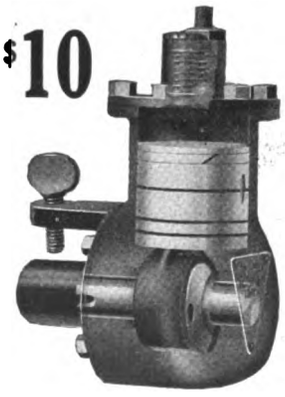

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$10 DETROIT Gearless Tire Pump

to 75 per cent. of the motorists to whom you show it. It goes on the crankshaft when you use it.

DETROIT ACCESSORIES CORP.

519 Hillger Avenue Detroit, Michigan

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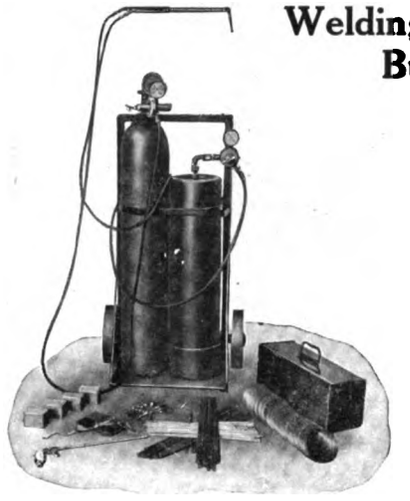
With the Approach of the Overhauling Season

IT IS WELL TO INVESTIGATE ANY TOOLS THAT WILL SAVE YOU CONSIDERABLE TIME AND ALSO ENABLE YOU TO DO BETTER WORK

We Believe We Make SOMETHING You Can Use to Advantage



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Price $50. (Tanks not Included.)

Welding, Steel Cutting, Brazing, Lead Burning and Carbon Removing

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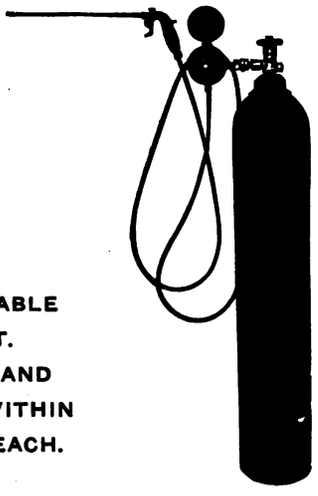

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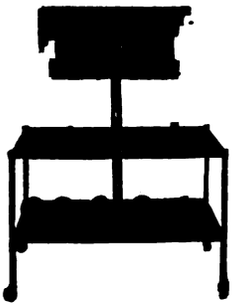

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ADJUSTABLE POST. PARTS AND TOOLS WITHIN EASY REACH.

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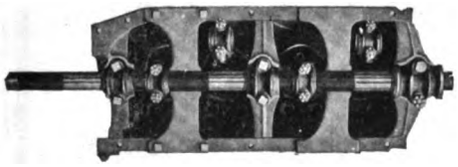
PISTONS

FOR THE FORD AND OTHER MAKES OF CARS

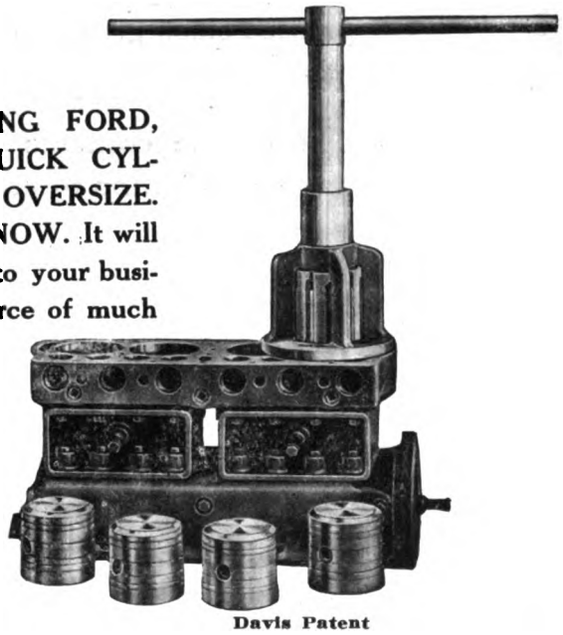


Two Adjustable Guides for Securing Perfect Alignment Furnished With Each Tool.

FORD CONNECTING ROD AND MAIN BEARING REAMER

Does away with the tedious method of scraping the bearings by hand, and with it can be done much more accurate work. Connecting rods are made to line perfectly with the cylinders. With this Reamer a job can be done in a very few minutes, leaving a smooth, glassy finish.

FOR REBORING FORD, METZ and BUICK CYLINDERS 1-32" OVERSIZE. Order this tool NOW. It will be a stimulant to your business and a source of much profit.



Davis Patent

FORD CYLINDER REAMER and JIG

A Necessity Wherever Repair Work on the Ford Is Done.

WRITE FOR GENERAL CATALOGUE.

THE G. H. DYER CO., Cambridge, Mass.

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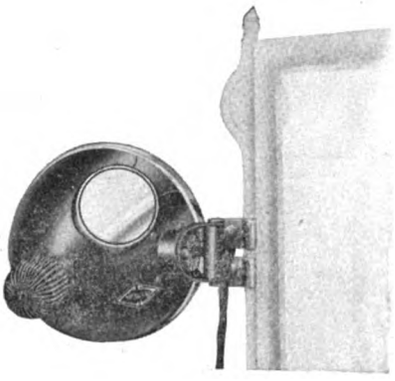
Giant Searchlight

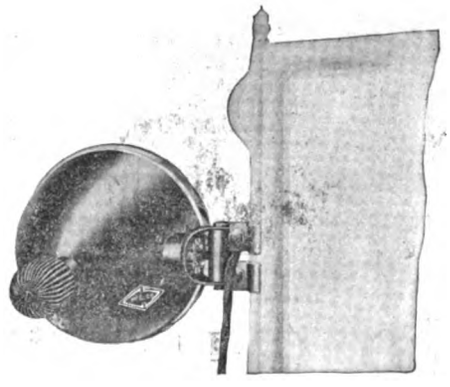
1917 MODEL

Strong, handsome, powerful searchlight at a reasonable price, with or without mirror. The mirror is adjustable and its location on the lamp can be determined by the individual driver.



The reflector is made of brass, silver plated over nickel, very highly finished. The outside shell of steel, black enameled. The rim which holds the glass is of heavy brass, heavily nickel plated, and the bracket made of pressed steel, giving great strength.

The handle contains a switch of unique construction, having no button to break or lose.



The construction allows the light to be placed in any position, and great care has been taken to properly balance the lamp so that it will stay in the required position. "Furnished with Mazda C" (gas filled) bulbs only.

Price, with mirror - - $6.
Price, without mirror - - $5.

Manufactured by

CULVER-STEARNS MFG. CO.

Main Office and Factory
Worcester, Mass.

Sales Office
Detroit, Mich

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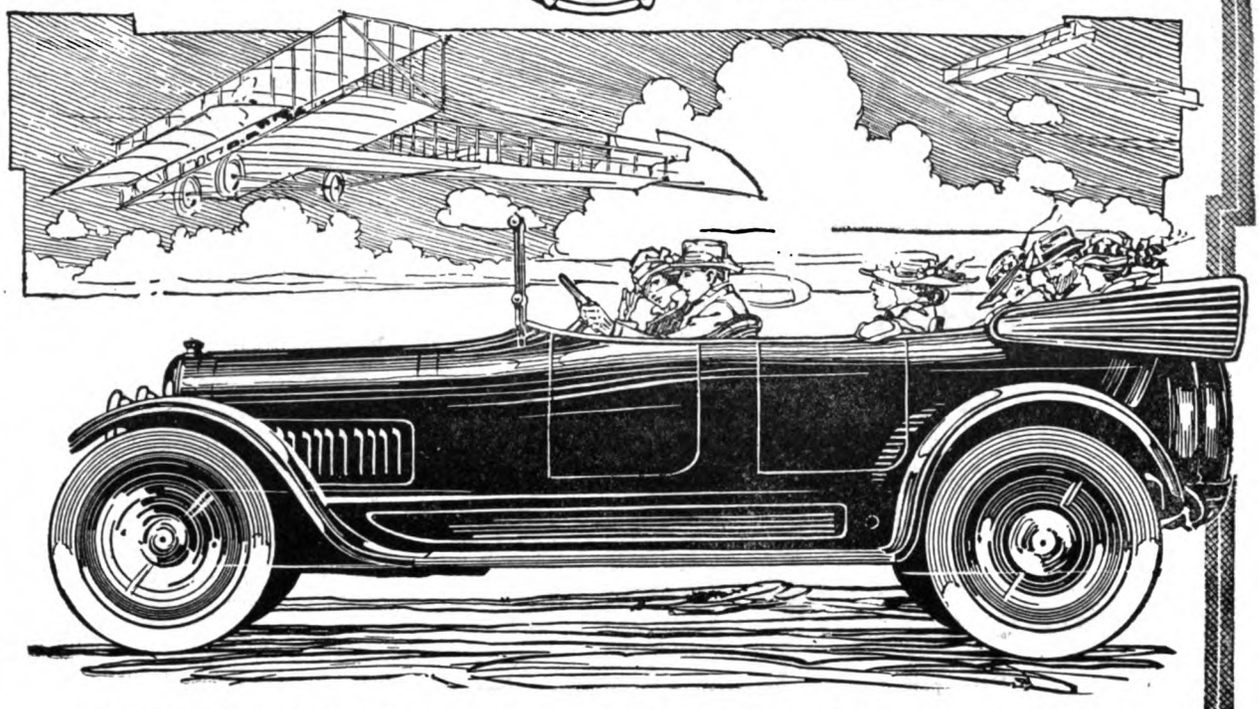


APPERSON ROADAPLANE

The culmination in motor car building has been reached by the APPERSON ROADAPLANE.

This is the result of the twenty-three years of concentrated experiments and motor car building by Elmer and Edgar Apperson.

As is the aeroplane to the air, or the hydroplane to the water, so is the ROADAPLANE to the road.

For beauty, luxury, style, comfort and mechanical perfection, the APPERSON car is the peer of all motor cars. It appeals strongly and favorably to all motorists.

			Code Word
Six cylinder, four passenger "Chummy Roadster"	$1750	Gold.	Kalot
Six cylinder, seven passenger	1750	Gold.	Kalaet
Eight cylinder, four passenger "Chummy Roadster"	2000	Gold.	Malot
Eight cylinder, seven passenger	2000	Gold.	Malaet

We base our right to a portion of the motor car business of the world on the fact that since 1893 we have constantly, exclusively and successfully been building motor cars of the highest grade. Consequently, **we know** the motor car **manufacturing** and **marketing** business.

Actively working at the head of our company are the two Apperson brothers, Elmer and Edgar, who still design and are responsible for the Apperson product and who, even then as skilled mechanics, built the first successful American automobile in 1893.

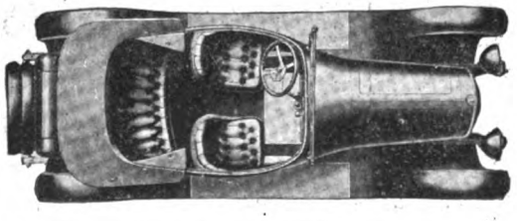
In unoccupied territory throughout the world we invite negotiations with responsible and reliable motor car dealers, who are in a position to give the Apperson line the kind of representation its intrinsic value and standing merits.

To interested automobilists or dealers complete catalogue in English or Spanish will be gladly mailed upon receipt of their request.

APPERSON BROS. AUTOMOBILE CO.

308 Main St., Kokomo, Indiana, U. S. A.

Cable address "Jarab"



The "Chummy" Roadster

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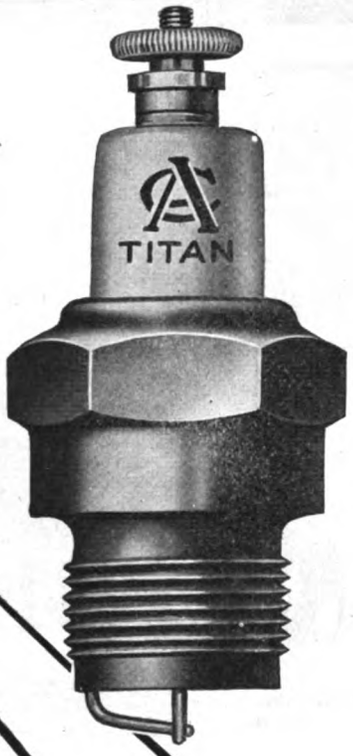
AC

The Standard Spark Plug of America



Accept No Plug Unless A C Is Burnt Into the Porcelain

Regular Equipment On These Cars:

Packard	Buick	Stearns-Knight	Knox	Chase Truck	Moreland Trucks
Pierce-Arrow	Oakland	Saxon	Jackson	Daniels	Pilot
Cadillac	Oldsmobile	Stutz	Apperson	Federal	Singer
Marmon	Jeffery	National	Davis	G. M. C.	Crane-Simplex
Hudson	Dort	Velie	Detroiter	Gramm-Bernstein Trucks	Stephens
Chalmers	Cole	KisselKar	Paterson	Republic Trucks	United Truck
Hupmobile	Reo	Palmer-Moore	McFarlan	McLaughlin (Canada)	Wilcox Trux
Chandler	Paige	Murray	Westcott	Monroe	Jordan
Haynes	Peerless	Bour-Davis	Lexington-Howard	Netco Trucks	Liberty
Chevrolet	Dodge Brothers	Premier	Brockway Truck		Signal Truck
		Sandow Truck	Scripps Booth		

CHAMPION IGNITION COMPANY

Sole Manufacturers

FLINT, MICHIGAN

A C Spark Plugs have been brought to perfection through exhaustive tests by expert engineers—our own, as well as those who build the cars listed above. Tried in the fire of performance, they have never been found wanting. Buy the plug with A C burnt into the porcelain.

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"Quality is Economy"

THIS IS THE SIGN OF A HOOD DEALER

"It was stated at the meeting of the Automobile Accessory Branch of the National Hardware Association on October 17th that manufacturers' competition was the cause of some of the worst abuses in the accessory trade and that perhaps the greatest need of the distributor of accessories to-day is to have territorial control of a good advertised tire at a price which will cover cost of doing business."

THIS IS THE HOOD PLATFORM:

A TIRE of quality—well advertised; exclusive territories to every Hood Dealer, giving him a good margin of profit, well covering the cost of doing business; real selling co-operation with the Dealer; service to the user; a rigid maintenance of the highest standards in the making of tires.

Hood Tire Co., Inc.
Watertown, Mass.

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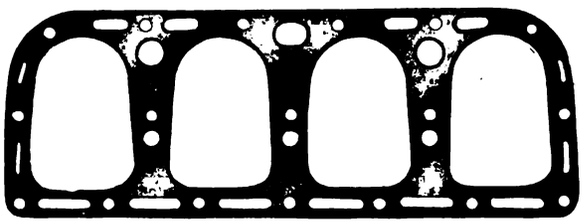
READY MADE
READY TO ATTACH
GASKETS

To produce a really good home-made gasket requires experience, patience and time consuming effort. It requires some science and knowledge of the proper materials to use if the cutting and fitting is to be done right. The workman must have these qualifications to fit a gasket properly, quickly and profitably.

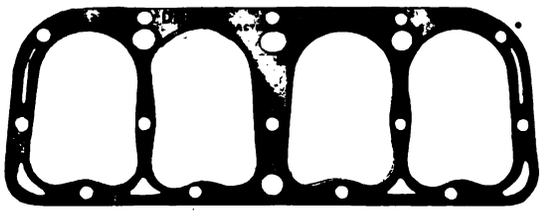
With a Fitzgerald Ready-To-Attach Gasket all the usual bother and delay is eliminated. They can be fitted perfectly and almost instantly and their cost is so moderate a garage, repair or machine shop man cannot afford to make gaskets when he can buy Fitzgerald Ready-To-Attach-Gaskets from his jobber or dealer.

Fitzgerald gaskets are made on honor and produced on a quality basis. They are trade-marked and sold under a full guarantee, covering material, workmanship, finish and, above all else, a perfect fit.

NOW MADE FOR THE FOLLOWING VEHICLES AND MODELS



FORD
VIM
DODGE



OAKLAND
ENGER
MONROE

CHEVROLET
MAXWELL
(75) OVERLAND (83)

We are the largest makers of special stamping and metal specialties in America. Enormous productions, great purchasing power with unlimited manufacturing facilities permits us to **undersell and give better quality goods than competitors.**

We make for the trade, all jobbers and dealers can supply any demand for the following:

Electric Motor Driven Horns, Electric Vibrator Horns, Mechanical Horns, Motorcycle Horns, Copper-Asbestos Gaskets, Auto and Motor Boat Push Buttons, Shims and Shim Stock, Washers and Stampings, Spring Battery Connectors, Gasket Sets for Ford cars, Ford Electric Lighting Outfits, Ignition Wiring Assemblies, Hard Rubber Switches, Wire Terminals, Brass and Steel Shim Stock and Hose Bands.

Catalogue, Price List and Discount Sheets at request

FITZGERALD MANUFACTURING CO.

TORRINGTON :: :: :: :: CONNECTICUT

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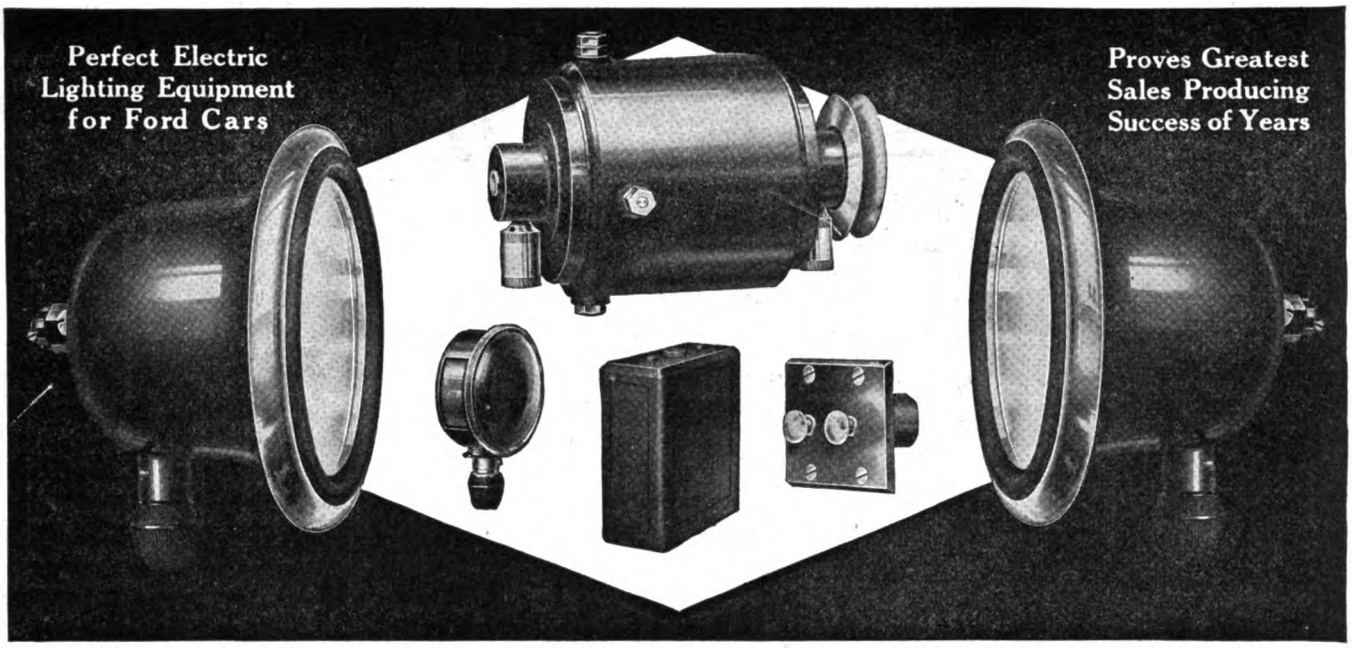


Six Million People have already read about the perfect Electric Lighting System for Ford Cars

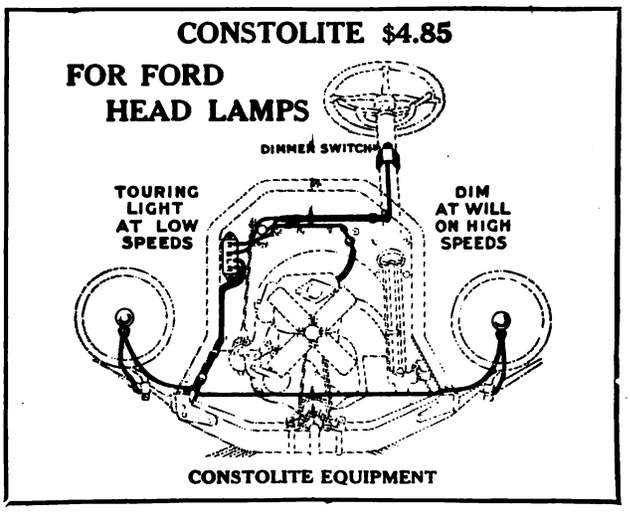
And we've only begun our sales producing National Advertising Campaign.

The full page "ad" in the October 14th issue of the Saturday Evening Post brought us thousands of letters from Ford owners and hundreds of telegrams from dealers.

Demand! We need a new word to describe this—the biggest profit-making accessory ever given to the trade. Think of the demand, think of the price and think of what we give in

Genolite $24.85

Here's a Generator for creating the current. A Storage battery to store and keep the juice for instant use. Two highest grade Electric Side lamps. An Electric Tail Lamp—Switch Bulbs—Brackets, Wiring—all necessary attachments. All identical in practice with the lighting equipment on a $5000 car.



And GENOLITE can be installed in two hours—no removing of the radiator, **no machine work necessary**—Everything complete — No more kerosene inconvenience and nuisance.

How do we do it for the price—Volume! that's the answer. Big production — big demand. It's the story of the Ford Value and price all over again. Simply Factory efficiency by men old to the business. Then there's

Constolite $4.85

to complete "perfection." A device that's different. With GENOLITE it makes the Ford Car a perfect-lighted Car. CONSTOLITE gives every Ford owner a dimming switch on the steering post. A fine touring light at low speeds, and a dimmed light at high speeds when desired and bulbs that if one goes out the other will stay lighted—a distinct advantage. GENOLITE and CONSTOLITE give team work in a perfect Electric Lighting System that couldn't be better or more efficient if we charged a hundred dollars for it.

Dynolite $6.85

We shall immediately put upon the market Dynolite, a complete, powerful, automatic windshield light with regulator for Ford cars. This is the first and only specially designed Spot Light ever manufactured for Ford cars. It possesses many exclusive patented features. It throws a brilliant light one thousand feet—that can be concentrated to a pin point or diffused and focused to meet all State lighting laws. The price of this remarkable Spot Light is $6.85. Immediate deliveries. Dealers wire or write, Dept. G.

THE DETROIT STARTER COMPANY
DETROIT, MICHIGAN
Our reputation is your guarantee.

CANADIAN DISTRIBUTORS: The Canadian Fairbanks Morse Company, Limited Montreal, Canada

Canadian Prices—Genolite $33.85; Constolite $6.85; Dynolite $9.85
Duty Paid, f. o. b. Montreal

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THE AUTO BLOCK SIGNAL

SHOULD BE ON YOUR CAR

It May Save Your Engine

F. Thornburgh

Lack of oil—loose connecting rods—too much carbon—scored cylinders—low water—these are the "danger" points forever threatening the life of your engine. To correct the trouble at the start is the "stitch in time" that saves big repair bills.

The engine is the throbbing heart of your car. And the "AUTO BLOCK" stands with a finger on the pulsating mechanism—guiding—guarding; an assuring sign of safety when "all is well"—ready to flash a signal of distress at the first indication of engine disorder.

It's a simple, accurate, indispensable utility—working every minute, in the driver's **easy** view. No guessing. No mystery. No figures, outlines nor thermometer scales. **Just a big red dial that turns jet black** the instant disorder begins. The only practical "trouble stopper."

Driver's Dial Half Size

Ornamental: The "AUTO BLOCK" is the most beautiful of all car head decorations, worth twice the price for it's beauty alone. On the forward side, embossed in fine detail, is the great seal of the U. S. A.—or in its stead your fraternal emblem—or for a small cost-charge, your crest or monogram.

Illustrations show front and back. Full sizes 2⅜" in diameter, ¾" thick.

Forward Side Half Size

Don't waste money on "workless" ornaments. Don't wait for disaster to prove the need for the AUTO BLOCK. Its cost, $5.00, is a small percentage of the repair bills it may save.

See your dealer today. If he cannot supply you write us direct.

Dealers, Agents & Garage Men

Big profit for you in the "AUTO BLOCK". Its the best selling "warner" made. No directions, No red tape, No canvass necessary. All car owners buy on sight. Write today for our proposition.

AUTO BLOCK SIGNAL CO.

1260-1 Continental & Commercial National Bank Bldg.

Chicago, Illinois

PRICE ONLY $5.00

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"Yours for Service"

THE Edison MAZDA Lamp Automobile Assortment

Win These Winter Profits Through this book and a small but complete assortment stock of EDISON MAZDA automobile lamps on your counter, *anybody* in your establishment can equip *any* car with the correct lamp for every lamp socket.

It's just one *additional expert service* you can give your customers—and one additional source of *winter profits.*

Small Investment Quick Turnover The price of a tire or two will put the complete assortment on your counter when it will immediately begin to do business for you. You will turn your stock fast and you can renew it automatically.

This assortment stock plan makes automobile lamps one of the fastest selling accessories

Sell Six At a Time We furnish Automobile Lamp Chests that hold six lamps. Pack them from your *assortment* for any car—spare lamps to insure your customers against delays and trouble due to breakage and burnouts.

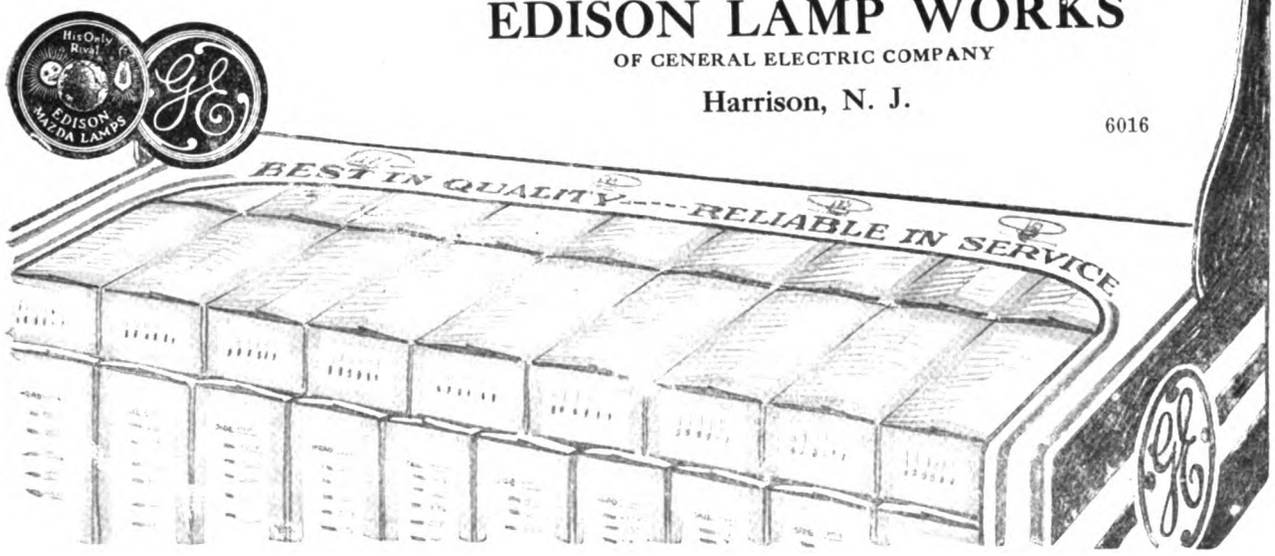
Don't hesitate. Write at once for agency plans.

EDISON LAMP WORKS

OF GENERAL ELECTRIC COMPANY

Harrison, N. J.

6016



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The Crane PATENTED PUMP Belongs Here

Oilless Air
32% More Efficient
No Leaky Piston Rings

CRANE ENGINE DRIVEN PUMPS should be listed in every jobber's catalog. They are built on a principle that is different and that commends itself to the dealer and the consumer.

The CRANE PUMP is built with a special alloy packing-ring instead of the usual leaky, fast-wearing piston ring. Oil cannot get into the air pumped by a CRANE. Dealers and customers know the advantages of this as well as you do.

SEE THE WAY IT IS BUILT!
THINK HOW IT WILL SELL!

Cylinders and pistons are made of tough, light, pressed-steel and are ground carefully to size. Connecting rods are made from high quality bearing metal, carefully machined and broached. Bearings are as nearly frictionless as possible. Splash oiling, the system voted most efficient by Automobile Engineers, is used and the patented packing ring prevents any oil from entering air-chamber.

This pump will fill a tire in one-half the time taken by any other pump of its displacement. Its installation is simple, a special bracket makes it easier. A visible pressure gauge, located at the discharge end of the supply hose, guards tires against bursting.

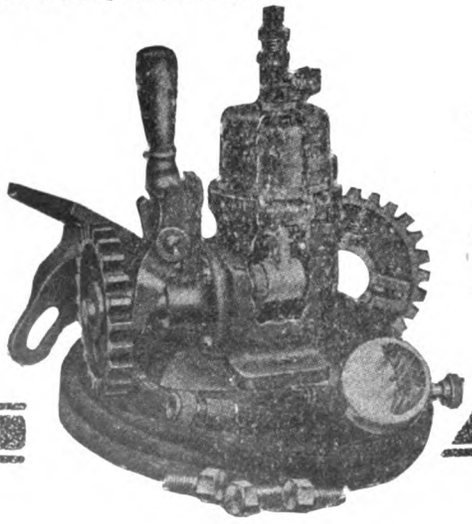
Don't you think such a pump, retailing at $8, BELONGS in your catalog?

Our extensive advertising campaign which starts January 1st and continues throughout the year in the Leading Automobile Publications will create a constant demand for CRANE ENGINE DRIVEN TIRE PUMPS.

We furnish *CRANE* engine driven tire pumps complete with attachments on the following cars:

Ford all models.	Jackson 34.
Buick C 24-25.	Jackson 46.
Buick C 36-37	Oakland 38.
Buick D 44.	Hudson Super Six.
Buick D 45.	Hudson 6-40-1915-1916.
Chandler 1914 15-16-17.	**Oldsmobile 43.**
Dodge 1915-16 with magneto	Kissel Kar 6-42.
Hupmobile model K.	Kissel Kar 38 or 100 point 6
Jeffrey 4-1916, 472-1917.	Hollier 6 cylinder 1917.
Maxwell 1916-1917.	Davis model G 1916-1917.
Overland 59-69-79.	Bour-Davis 1916-1917.
Overland 80-81.	Empire 1916-Six.
Overland 83-83B.	Velie model 22 1916.
Overland 84.	Velie model 28 1917.
Reo 1912 to 1914.	Paterson 4-33-1914.
Reo 1915-1916.	Paterson 6-1915.
Reo model F 1917.	Paterson 6-42 1916.
Studebaker 4 and 6 cylinder 1915.	Grant T & V 1915-1916.
Chevrolet H1-H2-H3-H4-1915.	**Grant K 1917.**
Chevrolet H1-H2-H3-H4-1916.	Abbott-Detroit 1916-1917.

...seconds. Furnished in ⅛-18 and ¼...
...o pump. $1.50 extra



Manufactured by

BAY STATE PUMP COMPANY

263 Congress St.

BOSTON, MASS. U. S. A.

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Crane PATENTED

Engine Driven Tire Pump

The CRANE PUMP fills your tire in half the time taken by any other pump of its size. The use of patent packing ring prevents the leaking of oil into your tires.
This pump can be installed on your car in a few moments.
Complete outfit of pump, bracket, supply hose and easy-to-read pressure gauge.

Price.....$8.00

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VOL VI. PAWTUCKET, R. I., NOVEMBER 1916. No. 7

$2,250,000 Month's Net Earnings of General Motors.

Annual Report Shows Cash and Drafts On Hand Amounting to Approximately $22,946,000.

At the annual meeting of the stockholders of the General Motors Company, held in Jersey City, Nov. 22, President W. C. Durant announced that the company's earnings were running at the rate of $2,250,000 a month. It was also announced that the company is doing 17 per cent. of the entire export business from this country in pleasure cars.

The financial statement as of Nov. 15 showed that the cash and drafts on hand totaled $22,946,000, as against $11,311,000 on the same day in 1915.

"To take advantage of low priced contracts and to provide for increased output, all of our companies have acquired large stocks of materials," said Mr. Durant in the course of his remarks. "Our inventory is now about $30,000,000, 25 per cent. greater than would be required in normal times. The output in 1917 will be 20 per cent. ahead of that for 1916.

"The business of the company is in splendid condition. There are no mysteries or is there anything mystifying about the motor car business. It means capital, good management and organization and good product. Our product is uniformly good and our cash position excellent. We have a splendid position in the trade with an excellent equipment and organization."

During the three months following July 31, when the annual report was made, the General Motors Company sold 37,884 cars, as compared with 30,272 in the same period in 1915.

W. C. Durant was re-elected president and Pierre S. Du Pont was elected chairman of the board of directors. The other officers elected were as follows: A. A. Bishop and C. S. Mott vice presidents; H. H. Rice, treasurer; T. S. Merrill, secretary; M. L. Prensky, controller; Standish Backus, general counsel; L. G. Kaufman, Charles H. Sabin and J. J. Raskob, general financial committee. W. C. Durant, C. S. Mott, W. E. Chrysler of the Buick Company, W. L. Leland, vice president of the Cadillac Company; S. W. Warner of the Oakland, W. L. Day of the General Motors Truck Company and R. H. Collins, also of the General Motors Truck Company, were appointed members of the finance committee.

FABRICORD TIRE COMPANY HAS BEEN ORGANIZED.

The Fabricord Tire Company, of which N. W. McLeod of St. Louis, the tire inventor, is president, has acquired the Knight Tire and Rubber Company of Canton, O., and it is understood that this merger is the first of a number which will eventually develop into a $20,000,000 corporation to enter the cord tire business under patents issued to Mr. McLeod.

BLACK & DECKER TO EXPAND.

The Black & Decker Manufacturing Company, Baltimore, Md., maker of the Lectroflater and B & D electric drills, has purchased a 10-acre tract of land alongside of one of the railroads entering the city. While not yet ready to build, the company announces that work cannot be put off much longer because the demand for its product is increasing so rapidly that its present facilities are being over taxed.

Fisher Body To Defend Trade.

President Fisher Makes Statement About Infringement Suit Instituted Recently.

President F. J. Fisher of the Fisher Body Corporation states that his company will contest the claims of the Springfield Metal Body Company, in connection with alleged patent infringements.

Mr. Fisher says: "We have been advised by the best patent counsel we can get, and they confirmed our absolute belief that there is no infringement whatsoever. Had we ever thought we were infringing, we certainly would have abandoned that line of business, as it does not constitute over two per cent. of our entire business. We, however, prefer to stand on our rights."

$35,000,000 Parts Corporation Has Been Formed

Standard Welding and Perfection Spring Companies Are Merged Into Standard Parts Company.

The merger of the Standard Welding and the Perfection Spring companies of Cleveland, O., into the Standard Parts Company, a newly organized $35,000,000 corporation, also of that city, is one of the largest financial deals announced in the parts industry for some time.

The Perfection Spring Company has the reputation of making more automobile springs than any other concern in the world and the Standard Welding Company is one of the biggest producers of automobile rims bands and facings for solid tires, bicycle and motorcycle formed parts and light gauge steel tubing.

The Standard Parts Company's capital of $35,000,000 consists of $10,000,000 in seven per cent. cumulative preferred stock and $25,000,000 common stock. Half of the preferred has been issued and $8,000,000 of the common. A syndicate has underwritten the common stock that is to be issued and it will not be offered to the public; but $4,000,000 preferred is offered for subscription at par.

The exchange of shares will be made on a basis of share for share figuring Perfection Spring preferred at $110 and the preferred stock of Standard Parts at $100, which would entitle the holder of the former securities to either $110 in cash for each share of stock or a share of the preferred plus $10.

Two shares of Standard Parts common are offered for each share of Perfection Spring common. The holders of Standard Welding stock have been offered either $250 in cash for each share of their holdings and the privilege of participating in the underwriting of Standards Parts common to the extent of one-half the number of shares they hold.

The board of directors of the Standard Parts Company is comprised of J. H. P. McIntosh, Sr., F. F. Prentiss, H. P. McIntosh, Jr., T. E. Borton, Christian Girl, E. W. Farr and A. H. Goss.

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New Chalmers Motor Corp.

Old Chalmers Company to Be Succeeded by New Corporation, Chartered in New York.

Articles of incorporation for the Chalmers Motor Corporation have been filed in Albany, N. Y. The new company is to succeed the Chalmers Motor Company. Under the refinancing plan the corporation has 600,000 shares of stock of no par value, of which 135,000 shares will be kept in the treasury, and 200,000 will be kept for exchange purposes. The money derived from the sale of 265,000 shares that is being offered will go into the treasury.

The present holders of common stock will receive four shares of the new stock for each share of the old and the preferred stockholders have an option of taking either $115 per share for their stock or receiving 3½ shares of the new stock for each share of the old.

The directors of the new company are Benoni Lockwood, F. A. Gaynor and R. G. Goad of New York City.

WELFARE WORK AT METZ FACTORY.

The officials of the Metz Motor Car Company are not entirely absorbed in the work of expanding the big plant at Waltham, Mass., to increase the productive capacity, but are also finding time to make plans for the social benefit of the employees. The interest shown in this welfare work by President Charles H. Metz has always been a feature of the Metz policy, but conditions were never before so auspicious for carrying out on a large scale his ideas in extending social justice to the employees.

The great demand for Metz cars during the past year, with its consequent flood of prosperity at the Metz plant, is the cause of a quarter of a million dollar addition being made to the plant. The requisite amount of machinery is being arranged for. The employees in the meantime have been provided with a club house, athletic field and a park of 147 acres. The company also proposes to erect a gymnasium, a separate baseball diamond, gridiron and half-mile track, which improvements will be built in the spring.

Both Mr. Metz and Roscoe A. Pickens, sales manager, are enthusiasts in this welfare work, but it was not until the present prosperity came through the large sales of Metz cars that they were enabled to see their plans materialize.

This social work will be carried out on an elaborate and comprehensive scale, but the full plans have not been developed as yet. The location of the plants are ideal for the purpose being situated on 147 acres of land, formerly a part of the Governor Gore estate, which was the home of Massachusetts' chief executive 120 years ago.

NEW PRICES ON THE KISSELKAR MODELS.

The new prices on the KisselKar Hundred Point Six models, which become effective Dec. 1, show an advance of from $100 to $115 as compared with the prices prevailing prior to that date.

The new prices are as follows:

Five-passenger touring (not built for all-year top), $1195.

Three-passenger roadster (not built for all-year top), $1195.

Five-passenger Gibraltar touring (specially built for all-year top), $1285.

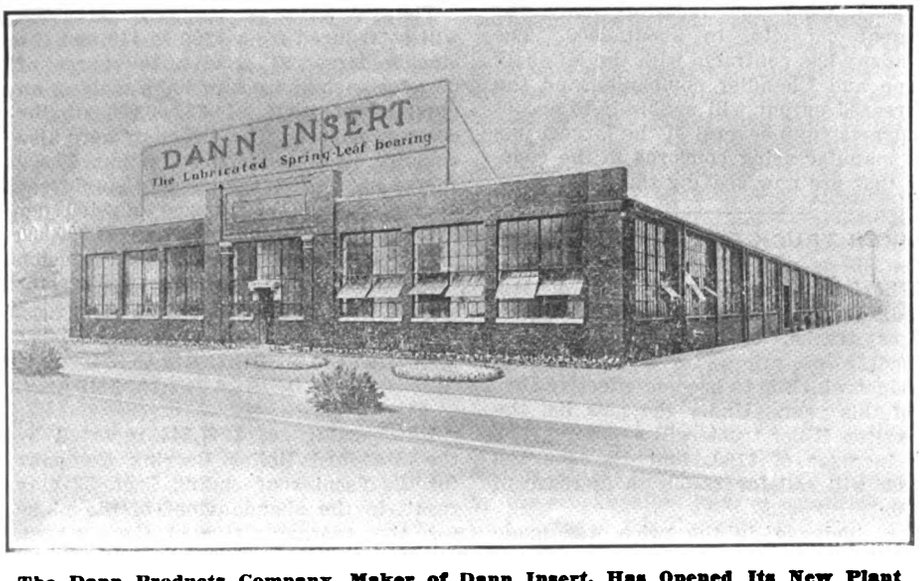
Four-passenger Gibraltar touring (specially built for all-year top), $1285.

Five-passenger Victoria (with detachable town car top), $1950.

Five-passenger all-year sedan (including summer top), $1635.

Four-passenger all-year coupe (including summer top), $1635.

Any of these models equipped with five wire wheels, $100 additional.



The Dann Products Company, Maker of Dann Insert, Has Opened Its New Plant in Cleveland, O., at 1084 E. 152nd Street, and Containing 30,000 Square Feet of Floor Space. Plans Are Already Underway to Enlarge This Plant.

Service Mgrs. Elect Officers.

Indiana Association Holds Annual Meeting and Has Most Successful in Its History.

At the second annual meeting of the Indiana Automobile Service Managers' Association, held in Indianapolis at the Severin hotel, the following officers were elected for the ensuing year: President, Edward T. Klee, Stutz Motor Car Company; vice president, E. W. Cotton, McFarlan Motor Company; secretary-treasurer, W. D. Smith, Cole Motor Car Company.

The following committees were named: Papers, H. W. Drew, Nordyke Marmon Company, chairman; D. C. Norris, Crow Elkhart Company; O. W. Williams, Inter-State Motor Company. Membership, V. M. Armstrong, Cole Motor Car Company, chairman; F. R. Leeds, Lexington Howard Company; W. E. Conover, Premier Motor Company. Social committee, L. V. Voyles, Nordyke Marmon Company, chairman; J. O. Meyers, Haynes Motor Car Company; Orin Beroth, National Motor Vehicle. Standards committee, E. W. Cotton, McFarlan Motor Company, chairman; M. Bleiweiss, Premier Motor Company; J. D. Hopper, Remy Electric Company; G. W. C. Braithwaite, Apperson Motor Company.

IMP ADVERTISEMENT ATTRACTS ATTENTION.

Few advertising novelties have attracted as much attention in New York City as the motorcycle outfit that is operated by the Imp Carbon Chaser Corporation on the streets of that city.

The operator of the machine wears a Mephistophelian hood and mustache and on the panels of the body of the car attached to the motorcycle there are large devils' heads, in replica of the trade mark of the Imp carbon chaser. On the forward panels there is a facsimile picture of the containers in which the Imp Carbon chasers are packed. This novelty was conceived by W. S. Milliken, president of the Imp corporation.

Imp carbon chaser is different essentially then all other carbon remedies on the market. It comes in small oblong cakes and one tablet is used with each five gallons of gasoline to secure the desired results. It not only eliminates the formation of carbon, but incidentally results in increased power, perfect ignition, uniform combustion and greater mileage to the gallon of gasoline. The engine will run on a much lighter mixture and other favorable results are obtained that naturally would follow the elimination of carbon troubles.

The carbon chaser was tested for 18 months before Mr. Milliken placed it on the market, and he also claims as a result of his tests that there is not the slightest chance of damage to the engine or any of its parts by the use of the chaser.

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New York City Garages Organize.

New Organization Bears Name of New Garage Owners' Board of Trade, Inc.

The garage men in New York City have formed an association and will establish a credit bureau. A directors' meeting will be held once a week to consider business and the members will meet once each month. The organization is called the New York Garage Owners' Board of Trade, Inc. Benjamin L. Friedman of the Equitable Garage is president. The other officers are: Vice president, Joseph Caron; treasurer, Joseph J. Duffy of the St. Paul Garage; secretary, James J. Toomey of the St. Paul Garage. The officers, together with Harry Thal of the Equitable garage, constitute the board of directors. D. D. Deutsch is general counsel.

J. H. FASSIT, PRESIDENT OF PHILADELPHIA DEALERS.

John H. Fassitt of the Foss-Hughes Company has been elected president of the Philadelphia Automobile Trade Association to succeed William P. Herbert, who recently resigned.

A. E. Maltby succeeds Mr. Fassitt as vice president of the organization and J. E. Gomery was elected secretary and treasurer. Lee J. Eastman was chosen for the board of directors to fill the vacancy created by Mr. Herbert's retirement.

PLANS FOR HANDLING DEALERS AT SHOWS.

With the object of doing away with inconveniences to dealers attending the national shows this year, the management has adopted a new plan which is expected to relieve the dealer of all worry about registrations or identification. He will simply present his ticket at the door and enter as other individuals. The manufacturer himself will be the judge whether any particular dealer is really entitled to additional admissions. The show will be protected against the misuse of season tickets which has of late become a severe menace, not so much on account of the dollars involved, but on account of the overcrowded condition of the buildings. The impression in the public mind is that the show is becoming to a large extent a free exhibition.

A list of the dealers will be supplied by the manufacturers and to every dealer there will be sent three single admissions, intended for his personal use. The dealers in important cities will receive three additional tickets, also intended for their personal use. It is expected that this number will be sufficient. Last year the average number of attendance of each dealer was slightly less than three.

In addition there will be given to each exhibiting member a very limited number of blank tickets, the distribution of which will be in the hands of the exhibitor's representatives, as he may find necessary to enable him to take care of the requirements of those dealers who find that the number of tickets sent them are insufficient.

BOSCH COMPANY MAKES FOURTEEN CONTRACTS.

The Bosch Magneto Company has signed contracts with 14 large concerns engaged in the automobile and commercial vehicle industry providing for the use by these companies of Bosch magnetos for the coming season.

The concerns are as follows:

Thomas Evarts Adams, Inc., New York, N. Y.

Independent Auto Truck Company, Davenport, Ia.

Ben Hur Motor Company, Willoughby, O.

Luverne Automobile Company, Luverne, Minn.

Chandler Motor Car Company, Cleveland, O.

Drexel Motor Car Corporation, Chicago, Ill.

Lewis-Hall Iron Works, Detroit, Mich.

Hahn Motor Truck and Wagon Company, Hamburg, Penn.

Available Truck Company, Chicago, Ill.

G. A. Schacht Motor Truck Company, Cincinnati, O.

Wichita Falls Motor Company, Wichita Falls, Tex.

McFarlan Motor Company, Connersville, Ind.

Durable Dayton Truck Company, Dayton, O.

Twin City Four Wheel Drive Company, St. Paul, Minn.

Parke G. Sedley, formerly New York branch manager of the Heinze Electric Company of Lowell, Mass., has joined the sales organization of the Eisemann Magneto Company and will be stationed at the general office in Brooklyn, N. Y. During January he will go to Chicago, where he will have charge of the direct branch of the Eisemann Company.

Velie Companies In New Hands.

$2,000,000 Corporation, Under Name of Velie Motors Corporation, Has Been Formed.

The Velie Motor Vehicle Company and the Velie Engineering Company, both of Moline, Ill., have been merged into the Velie Motors Corporation, which has a capital of $2,000,000. This action does not affect the status of the Velie Carriage Company, which will continue operations as an individual concern. There was no change made in the personal of the directorate that will conduct the business of the allied concerns, the directors being W. L. Velie, S. H. Velie, F. R. Todd, C. B. Rose, F. E. Bradfield, O. E. Mansur and L. E. Nutt.

STALNAKER IS MANAGER.

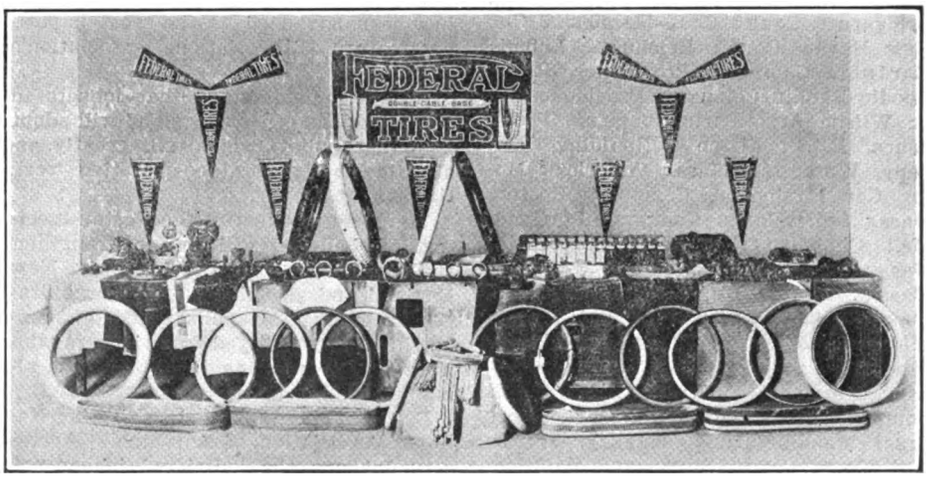
W. T. Stalnaker has been appointed service manager of The Pathfinder Company of Indianapolis. He was formerly with the mechanical department of the company and prior to entering the factory spent a number of years with his father, W. E. Stalnaker, the Pathfinder distributor in the Chicago territory.

"FACTS ABOUT GEARS" BY VAN DORN & DUTTON.

The Van Dorn & Dutton Co., specialist in gears and gear cutting, has issued a booklet entitled "Facts About Gears," which gives a technical treatise of that subject.

Some of the space is devoted to views of the various departments of the company's plant, but it is mainly devoted to a description of the processes of gear manufacture and also includes valuable tabulated data on gearing terms, drawings and specifications and formulae for every type of gearing.

A copy will be sent free upon application to the main office of the company at Cleveland, O.



During the Recent Convention of Wisconsin Teachers' Association in Milwaukee the Visitors Were Guests of the Federal Rubber Company and Were Shown the Entire Plant and the Above Rubber Exhibit, from Raw Materials to Finished Federal Products.

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N. A. A. A. J. In New England.

National Ways and Means Committee Holds Important Session in Boston—Many Jobbers Attend.

THE activities of the National Association of Automobile Accessory Jobbers will be greatly increased in scope, particularly in the New England field, as a result of the meeting held by the ways and means committee of the organization at the Copley Plaza Hotel, Boston, Mass., on Wednesday, Nov. 22.

Meetings preliminary to the general gathering were held during the first two days of the week, at which tentative plans and arrangements were discussed. The objects of the association, which are to better trade conditions in the accessory lines, include ways to secure mutual co-operation, the adjustment of accounts and to collect and distribute information that will prove valuable in the conduct of the members' business.

Jobbers from all over New England were invited to be present at the meeting and a majority of those invited either attended or were represented.

Among those present from the National organization were: Sidney B. Dean, president of Nichols, Dean & Gregg, St. Paul, Minn.; William M. Webster, National commissioner; W. K. Norris, president of the McQuay-Norris Manufacturing Company, St. Louis, Mo.; A. B. Caswell, the Champion Spark Plug Company, Toledo, O., and A. M. Moody, the Wetmore-Savage Company, Boston, Mass.; William Sparks, Sparks-Withington Company; George W. Shafer, W. E. Pruden Hardware Company; W. W. Lowe, Electric Appliance Company.

Representatives were present from practically all the following jobbing and manufacturing firms: Tarbell-Watters Company, Springfield, Mass.; Wetmore-Savage Company, Boston, Mass.; Gray & Davis, Inc., Boston, Mass.; Frank Mossberg Company, Attleboro, Mass.; Walden Manufacturing Company, Worcester, Mass.; Royal Equipment Company, Bridgeport, Conn.; C. S. Mersick & Co., New Haven, Conn.; Belcher & Loomis Hardware Company, Providence, R. I.; Goodby-Rankin Company, Providence, R. I.; Wilson Auto Parts Company, Providence, R. I.; Alsten & Goulding Company, Worcester, Mass.; American Motor Car Equipment Company, Boston, Mass.; Bailey-Jones Company, Portland, Me.; Chapman & Brooks, Springfield, Mass.; Darling Auto Company, Auburn, Mass.; Henry Horton, New Haven, Conn.; Post & Lester, Hartford, Conn.; Waite Auto Supply Company, Providence, R. I.; Clover Manufacturing Company, Norwalk, Conn.; American Chain Company, Bridgeport, Conn.; Bridgeport Brass Manufacturing Company, Bridgeport, Conn.; Dover Stamp and Manufacturing Company, Cambridge, Mass.; Gibson-Hollister Manufacturing Company, Boston, Mass.; Goodell-Pratt Company, Greenfield, Mass.; Hopewell Bros., Watertown, Mass.; Hartford Machine Screw Company, Hartford, Conn.; Motor Specialties Company, Waltham, Mass.; Noera Manufacturing Company, Waterbury, Conn.; Whitney Manufacturing Company, Hartford, Conn.; Providence Auto Equipment Company, Providence, R. I.; Auto and Supply Company, New Bedford, Mass.; Lewiscelle Supply Company, Boston, Mass.

The meeting was opened by President Dean, who made a brief introductory address, after which Commissioner Webster explained the objects of the organization and the great benefits that had been derived from its formation. He summed up some of the trades abuses that resulted under the old system, which was marked by "cut-throat" methods of dealing and controlling territory which made conditions almost chaotic so far as the manufacturer and jobber was concerned.

W. K. Norris and several other members spoke on various matters in connection with the organization and the work that was being accomplished in the trade. The subject of reversed telephone charges was discussed, as was also the necessity of making a charge of 10 per cent. on returned goods. The opinion was general that such a charge was only fair to the jobber as generally he sustained a much larger loss than this when obliged to take merchandise back from the dealers.

The five jobbers attending from Rhode Island, Albert E. Goodby of the Goodby-Rankin Company, Edward Waite of the Waite Auto Supply Company, F. F. Kellogg of the Providence Auto Equipment Company, Mr. Paine of the Belcher & Loomis Hardware Company, and Thomas F. Wilson of the Auto Parts Company will, it is understood, hold weekly meetings to further the co-operative idea that has been advanced as the most important feature of the National association's work.

It is also understood that jobbers in other sections of New England will adopt a similar policy, which will greatly assist in the general co-operative work throughout the country.

The general effect of the Boston meeting, it is believed, will tend to strengthen the movement among jobbers in New England and also the National organization, a number of applications for membership being received from jobbers who were at the meeting that were not already enrolled in the organization.

By becoming affiliated with the National Association of Automobile Accessory Jobbers, the individual jobber not only places himself in a more advantageous trade position, but also strengthens the organization itself as it extends its scope and makes it representative of a larger field of merchandisers. This fact is particularly true, as was explained in connection with the establishment of a credit bureau of the organization.

W. M. Webster, National Commissioner.

The individual jobbers have felt the need of a more comprehensive and exact system of handling their credits. While there has been co-operation among some of the jobbers in the same sections in the matter of extending credits to dealers, this has not been wholehearted in general and consequently was a very inefficient means of obtaining accurate data on which to base new credits or extensions. However, with a general bureau, in the hands of efficient and experienced credit men and with the data that could be furnished by the large number of jobbers, it is expected that the matter of credits in the jobbing trade will be greatly simplified and will at least result in greatly curtailing the losses that now result from extending credit on insufficient or erroneous information.

FIRST AUTOMOBILE SHOW TO BE HELD AT AKRON, O.

The Akron Automobile Dealers' Show Association of Akron, O., will hold an automobile exhibit in that city during the week of Dec. 9-16. It will be the first official exhibition of motor cars held by an organization in the history of Akron.

The dealers' association was formed recently of about 30 different agencies. All the space in the show was sold a few minutes after the space had been opened for allotment. There will be 40 lines of cars shown at the East Market Street Gardens, where the show is to be held.

The officers of the Akron Automobile Dealers' Show Association are as follows: President, A. O. Wood; vice president, E. G. Grady; secretary, W. J. Boardman; treasurer, J. H. Wiener. Executive board, Andrew Auble, Jr., C. C. Lowe and F. C. Sibbald.

BUFFALO DEALERS CHANGE SHOW DATE.

The Buffalo Automobile Dealers' Association, 401 Franklin street, Buffalo, N. Y., announces through John J. Gibson, secretary, that it has been decided to change the date of the association's 15th annual automobile show to Jan. 22-27.

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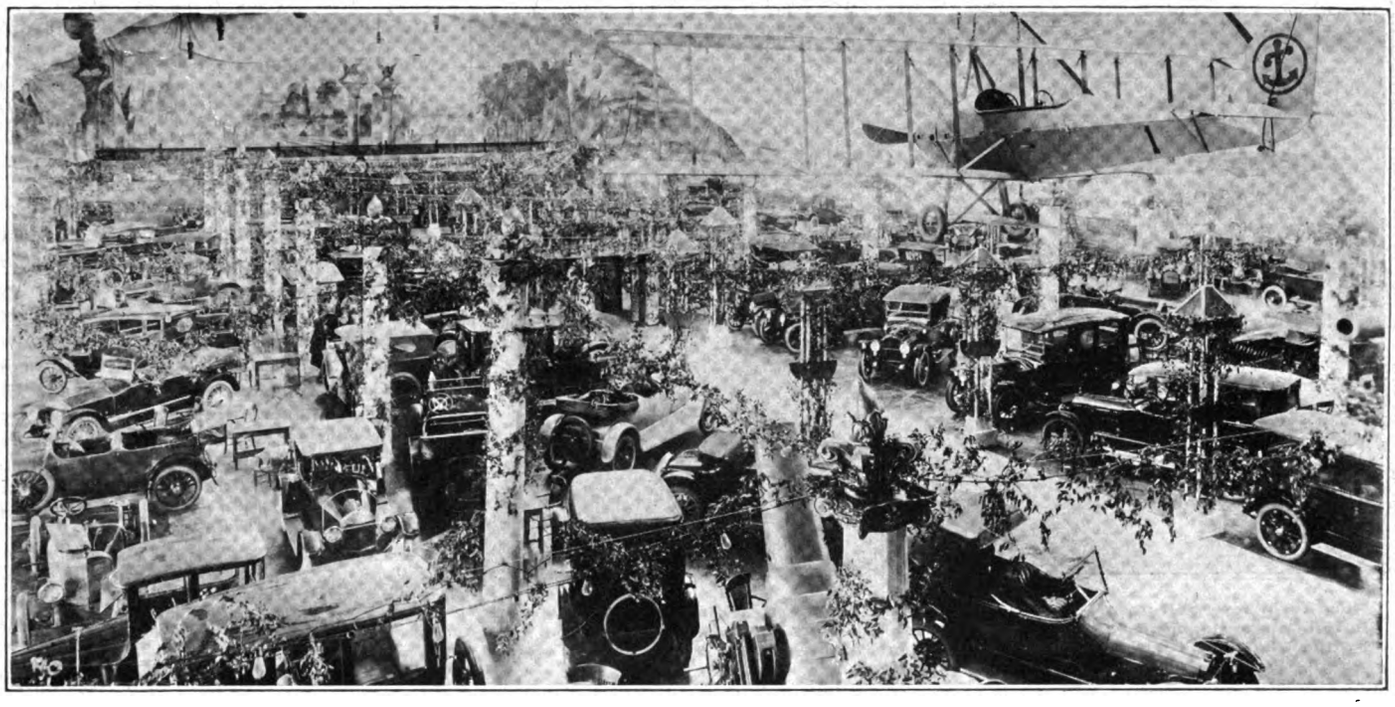

Display of Pleasure Cars in the Rhode Island State Armory, Showing Venetian Scenery and Beautiful Decorative Effect.

Big Auto Show At Providence.

Many New Models Shown for First Time In East—Thousands See Exhibits.

THE eighth annual automobile show of the Rhode Island Automobile Dealers' Association, held in the State Armory at Providence, R. I., under the management of Percival S. Clark, was open from Nov. 11 to 18 inclusive, during which period many thousands of people visited the exhibition. It was the biggest show that has been held so far this year east of the Missisippi river and many new models were shown there for the first time in that section. There were over 260 vehicles on display, including 20 different makes of commercial cars. All the leading manufacturers were represented and the display of the new body types was one of the principal features.

The machines were given a scenic setting that made a suitable environment in which to display the elegant lines and finish that has become such a conspicuous feature of modern design. The big interior of the armory was transformed into a Venetian scene of remarkable brilliance and splendor through the use of thousands of yards of colored bunting and thousands of tungsten lights.

Salesmen at the different exhibits reported an unusual interest, especially in the enclosed body types, and there were many more actual sales closed on the floor than at any previous show, although they were divided up among a larger number of dealers. In the commercial car department, which was located in the basement, the salesmen report that there was less interest of a superficial and curious nature displayed, but more actual inquiries for serviceable machines of every capacity from the light delivery cars to the huge six-ton heavy haulage trucks.

Percival S. Clark, Manager of the Show.

LIST OF EXHIBITORS.

Pleasure Cars.

Aetna Bottle and Stopper Company, Buick and Marmon.
Broadway Sales Company, Dodge.
Becker-Stutz Auto Company, Stutz.
Barre, Charles, Auburn and Allen.
Cadillac Auto Company, Cadillac.
Cutler-Morse & Co., Alfred, Roamer.
Chevrolet Motor Company, Chevrolet.
Chase, E. B., Velie.
Davis, Nelson S., Locomobile.
Davis, Richard G., Haynes, Sun.
Foster-Smith Company, Winton, Woods Dual Power and Chalmers.
Foss-Hughes Company, Pierce-Arrow.
Fuller, William H., Cole and Grant.
Howard, Albert J., Scripps-Booth, Biddle.
Hughes, Wm., Company, Reo.
Inter-State Company, Inter-State.
Kenworthy-Clark Company, Studebaker and Owen Magnetic.
Knight Auto Company, White.
Longley Motor Sales Company, King, Dort.
Union Motor Car Company, Mercer, Stearns, Knight.
Lorimer, L. B., Company, Hupmobile.
Mevis Motors Company, Chandler.
McCormick, Joseph, Peerless.
Narragansett Electric Lighting Company, Detroit Electric.
National Motor Sales Company, National and Oakland.
Nock, Edgar L., Moon Sixes and Dixie Flyer.
O'Donnell, John, Jeffery.
Powers, Robert W., Hudson.
Paige Motor Car Company, Paige.
Packard Motor Car Company, Packard.
Peckham Brothers, Oldsmobile.
Pugh Brothers Company, Overland.
Richards, Walter R., Mitchell.
Stone, Chauncey M. Dais.
Wilcox, Wallace L., Franklin.

Commercial Cars.

Arter, Roland E., Federal.
Atterbury Motor Truck Co., Atterbury.
Crane, Harold C., Chase.
Foss-Hughes Company, Pierce-Arrow.
Hopkins, B. F. and A. W., Reo and International.
Judd, John L., Co., Smith Form-A-Truck.
Kenworthy-Clark Company, Studebaker.
Knight Auto Company, White.
McCormick, Joseph, Peerless.
O'Donnell, John, Republic.
Pugh Brothers Company, Willys-Overland, Bessemer and Acme.
Vim Truck Sales Company, Vim.

Accessory Exhibits.

Auto Metal Works, Fracto headlight.
Belcher & Loomis, accessories.
Law, William, Willard Battery.
Providence Auto Equipment, headquarters.
Presto Cloth Company, Presto-Cloth.
Swan & Finch Company, oils and greases.
Shaw Propeller Company, carbonoid and Shaw wrenches.
Parker-Rishor Sales Company, Parker cleaner.
Such, Charles, Werco spray.
Iver-Johnson Sporting Goods Company.
Miller Carburetor Company of New England, Miller carburetor.
Quick-Rub Chemical Company, quick-rub cleaner.

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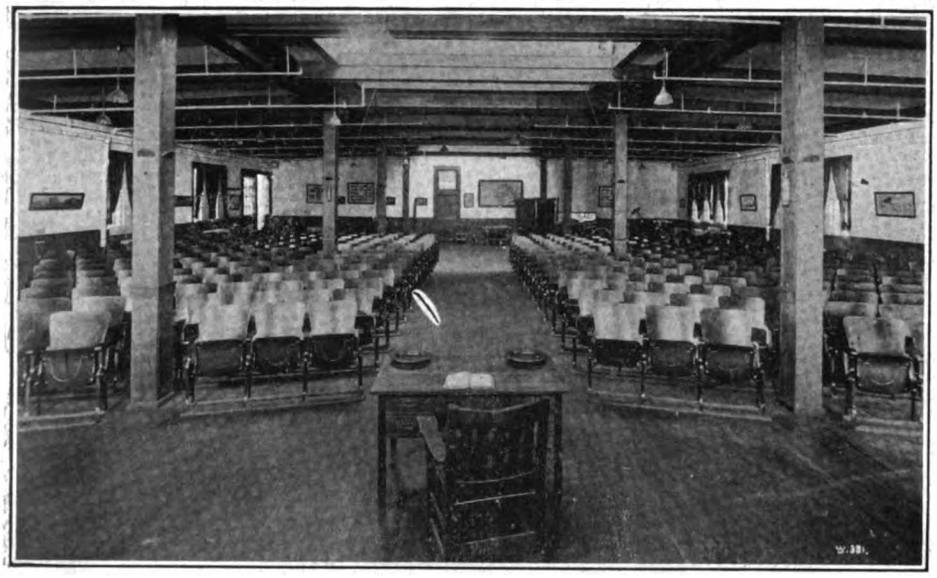

Here Is Where Salesmen Are Taught the Fine Points of Selling Chalmers Cars. It Is the Convention Hall of the Chalmers Motor Company, Detroit, Which Is Also Used by the Chalmers Girls' Club and the Chalmers Men's Club, Two Thriving Social Organizations.

M & A IS GROWING RAPIDLY.

Under a New Group of Officers and Directors a Bright Future is Predicted for the Association.

C. W. Stiger of the Stromberg Motor Devices Company was elected president of the Motor and Accessory Manufacturers at a recent meeting of the directors. Mr. Stiger succeeds F. Hallett Lovell, Jr., who resigned to retire from business.

William Sweet, who has been secretary of the organization, tendered his resignation to take position as assistant to the president of the United Motors Corporation. Mr. Sweet, however, will continue to be actively identified with the organization, having been elected a member of the board of directors and chairman of the 1917 banquet committee.

Christian Girl of the Perfection Spring Company was elected a member of the executive and finance committee and William Rands of the Motor Products Corporation was elected a member of the board to succeed C. E. Whitney, resigned.

The organization is to become a member of the Chamber of Commerce of the United States of America.

The following were admitted to membership:

A-B-C Starter Company, Detroit, Mich., manufacturer of auto electric starting and lighting systems.

Celfor Tool Company, Buchanan, Mich., manufacturer of internal gear drive motor truck axles and high speed drills.

Corning Glass Works, Corning, N. Y., manufacturer of technical glassware.

Detroit Weatherproof Body Company, Detroit, Mich., manufacturer of detachable closed tops.

Evapco Manufacturing Company, Detroit, Mich., manufacturer of Evapco gas savers and Jiffy starters.

Gillette Motors Company, Mishawaka, Ind., manufacturer of motors, manifolds, piston rings.

The Hall-Thompson Company, Hartford, Conn., manufacturer of polishes, dressings, enamels, chemical compounds.

Lipman Air Appliance Company, Beloit, Wis., manufacturer of air pumps, water and oil calculating pumps and other parts.

Morse Chain Company, Ithaca, N. Y., manufacturer of silent chain and sprocket wheels.

New York Coil Company, 338 Pearl street, New York City, manufacturer of ignition devices and auto accessories.

Perlman Rim Corporation, New York City, manufacturer of demountable automobile rims and parts.

Rubber Insulated Metals Corporation, Plainfield, N. J., manufacturer of tires, tubes and insulated tools.

Universal Shock Eliminator, Inc., New York City, manufacturer of shock eliminators and safety buffers.

Wagner-Hoyt Electric Company, New York City, manufacturer of starting, lighting, ignition batteries and switches.

PAIGE SUPERVISOR CHECKS UP OWNER SERVICE.

The Paige-Detroit Motor Car Company of Detroit has a service supervisor, Robert Evans, who devotes his time to seeing that owners of Paige cars are getting satisfactory service. President Harry M. Jewett, in speaking of this service that is given by the Paige company, says:

It is our aim to make service not only helpful, but also instantly available as far as possible. We believe that it is not only well to put as much dollar-for-dollar value into a car as possible, but that a very definite system of service must accompany our merchandising efforts if we are to build good will along with good cars.

Every dealer must not only keep a complete line of repair parts, but he must also maintain a thoroughly equipped and practical service department. It is the duty of Mr. Evans to check up on this system and his work does not stop with a visit to the dealer. He goes about town interviewing the individual owners to get their reports, for that is the way to get the real evidence—out in the field where the cars are being used in daily service.

ANNUAL MEETING OF THE HOLT-WELLES CO.

At the recent annual meeting of the Holt-Welles Company, Inc., of New York, manufacturers of Branford and Brown carburetors, plans for expanding the concern's distribution were announced. The following officers were elected for the ensuing year: President, E. H. Stickels; vice president, F. E. Hamilton; treasurer, Calvert Colt; secretary, Paul Welles; assistant treasurer and secretary, William M. Williams.

KING ADDS $50 TO PRICES OF THE EIGHT.

The King Motor Car Company, Detroit, has officially announced an advance of $50 on the list price of the eight-cylinder King car, to become effective Nov. 15. This brings the price of the seven-passenger touring car and three passenger roadster to $1400 each, and the sedan to $1950, all f. o. b. Detroit. President Artemas Ward, Jr., gives no assurance that this will be the final announcement of advance.

AMERICAN PARTS IN ITALIAN MADE CARS.

The Wallace C. Hood Service Bureau of Detroit has established an advertising and publicity division which will be in charge of Frank M. Eldredge, a well known advertising man of that city.

The Hood bureau renders service as business representatives to both manufacturer and automobile dealer, including accounting and auditing, sales promotion, advertising and publicity, purchasing and facilitating shipments and all other business service which may be assigned to the bureau by its clients.

A letter was recently received by the bureau from an Italian manufacturer who is about to engage in the manufacture of automobiles in that country from American made parts. The letter, which explains why manufacturing by this method is to become popular abroad, is as follows:

Awaiting further communications can say that your bureau can be most useful to us. The Italian government has recently forbidden (departmental decree of July 4th,) the importation of automobiles and all pleasure goods under very strong conditions. Only for ordination, dated and paid for before publication of the above decree, can be introduced in our country only with special permission of the Commerce Department. To answer the requirements of our government we are now resolved to build motor cars with American materials. You can be very useful to us in forming closer connections with American motor materials and parts manufacturers. We intend purchasing through your bureau complete chassis, the bodies to be constructed in

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Italy. We are very pleased with your proposal regarding the automobile materials and parts you can furnish us at reasonable conditions. We are now in the market for the purchase of all materials to be used on our motor cars and you can efficiently help us in this way.

ANNUAL BANQUET OF M. & A. MANUFACTURERS.

The annual banquet of the Motor and Accessory Manufacturers will be held on the evening of Jan. 10 at the Waldorf Astoria hotel in New York City during the week of the national automobile show in the Grand Central Palace. The other members of the show committee are: W. M. Sweet, chairman; C. E. Thompson, the Steel Products Company. Cleveland; C. W. Stiger, president of the Stromberg Motor Devices Company, Chicago; T. J. Wetzel, the Harrison Manufacturing Company, Lockport; James H. Foster, the Hydraulic Pressed Steel Company, Cleveland; Christian Girl, the Perfection Spring Company, Cleveland, and L. M. Bradley, manager of the M. & A. M.

DIRECTORY OF MAGAZINES AND NEWSPAPERS.

The H. W. Kastor & Sons, advertising company of Chicago and St. Louis, is publishing a complete directory of the newspapers and magazines issued in the United States and Canada. In addition to the names, addresses and classification of the publishers, circulation figures are given and also the population figures of the different towns, cities and states.

The book, while containing 700 pages, will be neat in form and easy to handle. Copies, which will be ready by the first of the year, will sell for $2 each. Copies can be reserved in advance of publication by sending check for the amount.

PITTSFIELD AUTO SHOW FOR NEXT FEBRUARY.

The second annual automobile show held under the auspices of the Company F, Second Massachusetts Regiment, in the State Armory in Pittsfield, Mass., will be held during the week of Feb. 19. James J. Callahan, who managed the show last year, will again have charge of the exhibition.

The annual banquet of the National Automobile Chamber of Commerce will be held at the Waldorf-Astoria on the evening of Jan. 9, during the week of the automobile show in New York.

The Chicago Automobile Trade Association will hold a used car show at the Chicago Coliseum during the week of May 8-14 next year. The exhibitors will draw for space, which will be sold at 40 cents a square foot.

The "Auto-Graphic," the monthly publication of the Northwestern Auto Supply Company, Inc., of Montana, contains many interesting paragraphs of events in that state and lively news of the happenings in western motordom.

This Is the Complete Hospital Opened Recently by the National Motor Vehicle Company in Connection with the National Safety First Campaign. The Hospital Is in Charge of a Trained Attendant and Is Equipped with All the Latest Medical and Surgical Devices.

THE N. A. A. A. J. IN CANADA.

Canadian Auxiliary Association Includes the Leading Accessory Jobbers of the Dominion.

If the plans of the organizers and members of the new Canadian Auxiliary of the National Association of Automobile Accessory Jobbers do not miscarry, the Canadian organization will rival the parent association in scope and influence.

The Canadian auxiliary is composed of accessory jobbers from various parts of the Dominion, a temporary organization having been formed at a recent meeting in Toronto, at which William M. Webster, commissioner of the N. A. A. A. J. in the United States, assisted in the work of organization.

At the meeting the following were present: J. E. Millen and J. A. Bennett, J. Millen & Sons, Montreal; A. J. Hopkins, Canadian-Fairbanks-Morse Company, Montreal; F. S. Evans, Evans & Son, Windsor; G. M. MacWilliam, Albert M. Bottcher and Frank E. Page, Hyslop Bros., Toronto; E. P. Gairns and M. C. Merriman, Northern Electric Company, Toronto; F. Oliver, Wood Vallance & Co., Hamilton; W. L. Moncor, Cutten & Foster, Toronto; E. G. Weed, Canadian National Carbon Company, Toronto.

The executives chosen at the meeting consist of the following: J. E. Millen, chairman; F. G. Robinson, Canadian-Fairbanks-Morse Company, vice chairman; G. M. MacWilliam, secretary-treasurer; A. J. Hopkins, chairman membership committee; F. Oliver, L. C. Cavanaugh, Motor Car Supply Company, Calgary, and F. S. Evans, were appointed to the membership committee. Messrs. Millen, Robinson, MacWilliam and Hopkins are the directors.

Such of the by-laws and constitution of the National Association of the United States as would apply to the auxiliary organization were adopted, with, however, only such local modifications and changes as were necessary, it being understood that the organization will at all times work in harmony with the national body.

It was decided to operate in a divisional manner, somewhat after the fashion of the Pacific coast, having for the east district Montreal and points in that section, while the central district would cover Toronto, Hamilton and points in that territory. Winnipeg, Calgary, Saskatoon and western points would be embraced in the western division, the idea being that matters of local nature or incident to the respective sections would be handled by members in such sections speedily and without sacrifice of time and expense of the entire body, the distance being so great in many cases.

A feature of the plans of the Canadian organization is that it intends to carry out in every sense the plank in the platform of the national body in reference to assisting the trade and it is the purpose of the Canadian auxiliary and its subdivided sections to give some little time, care and study to the interests and development of the retail trade, with a view to making the dealer and garage man more proficient and his business more inviting, with the ultimate result that profits will be materially enhanced and the jobber and manufacturer benefited.

Matters pertaining to credits, trade conditions and other abuses of local nature were discussed at the first meeting and ways and means provided to properly take care of them.

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MULTIBESTOS
BRAKE LINING

There are many reasons why dealers find it good business to handle MULTIBESTOS. In the first place, its quality is unquestioned and they know from experience that no brake lining can give better service or greater satisfaction.

MULTIBESTOS is made complete in our own factory. From the mining of the asbestos rock through the spinning of the yarn, the weaving of the fabric—even until the last nail is driven in the packing case—every precaution is made, every safeguard provided to insure safety to the growing army of MULTIBESTOS users.

As a result of this thorough-going policy, MULTIBESTOS combines downright satisfaction to the man who buys and the man who sells it. It is safe to buy. It is profitable to sell. It makes a friend every time the money passes.

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MULTIBESTOS CLUTCH FACINGS

MULTIBESTOS Clutch Facings are made in any size or shape to conform to any type of clutch.

Multiple disc clutch rings up to 30" diameter can be made endless or without special invisible joint. All MULTIBESTOS facings whether for disc or cone cluthes are exact in dimensions and perfect in form. They lie flat on the plate and will not swell or stick under any conditions of service. A special treatment makes them withstand the effects of oil and a special weaving process gives them a smooth, even friction surface.

Prices will be given gladly on MULTIBESTOS Facings for any clutch. Give large diameter, width, and thickness of lining for disc facings; give diameter and pitch of clutch for cone facings.

We are also equipped with riveting machinery and other facilities for attaching the facings.

STANDARD WOVEN FABRIC CO. (Factory) **Walpole, Mass.**

New York Branch and Export Offices, 1779 Broadway

Boston, 175 Massachusetts Avenue.
Chicago, 1430 Michigan Boulevard.
Philadelphia, 1309 Race Street.
Atlanta, 6 West Harris Street.

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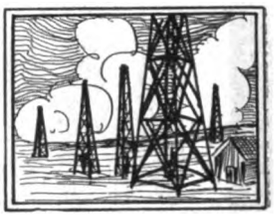
Securities and General Materials Markets.



	Oct. 5 Bid	Oct. 5 Asked	Nov. 15 Bid	Nov. 15 Asked
Ajax Rubber Co.	64	65	70	73
J. I. Case T. M. Co., pfd.	83	86	83	85
Chalmers Motor Co., com.	145	155	125	140
Chalmers Motor Co., pfd.	95	99	105	115
Chandler Motor Car Co.	105	106	105	105½
Chevrolet Motor Co.	198	201	186	190
Fisher Body Corp.	40½	42	39	42
Fisk Rubber Co., com.	97	106	..	93
Fisk Rubber Co., 1st pfd.	110	117	109	113
Fisk Rubber Co., 2nd pfd.	100	110	95	105
Firestone Tire & Rubber Co., com.	1110	1150	1150	1170
Firestone Tire & Rubber Co., pfd.	110	112	104	106
General Motors Co., com.	720	759	810	875
General Motors Co., pfd.	126½	127	124	126
B. F. Goodrich Co., com.	74¼	75¼	71⅝	71⅝
B. F. Goodrich Co., pfd.	113½	114	112	114
Goodyear Tire & Rubber Co., com.	295	300	293	296
Goodyear Tire & Rubber Co., pfd.	107½	107¾	108¾	109½
Grant Motor Car Corp.	9	11	8	10
Hupp Motor Car Corp., com.	5½	6½	5¼	6
Hupp Motor Car Corp., pfd.	..	95	92	100
International Motor Co., com.	10	..	4	8
International Motor Co., pfd.	18	21	20	30
Kelly-Springfield Tire Co., com.	81½	81¾	77½	78
Kelly-Springfield Tire Co., 1st pfd.	98	100	97	100
Lee Rubber & Tire Corp.	45¾	46	41½	41½
Maxwell Motor Co., com.	93	93½	84½	84⅞
Maxwell Motor Co., 1st pfd.	87¾	88	85	86
Maxwell Motor Co., 2nd pfd.	57	58	54	54½
Miller Rubber Co., com.	250	265	240	260
Miller Rubber Co., pfd.	104	106	105	107
Packard Motor Car Co., com.	175	185	..	175
Packard Motor Car Co., pfd.	97	102	93	99
Paige-Detroit Motor Car Co.	33½	34½	38	39
Peerless Truck & Motor Corp.	24	25½	23	25
Portage Rubber Co., com.	170	180	170	173
Portage Rubber Co., pfd.	170	180	170	173
Regal Motor Car Co., pfd.	17	22	46	48
Reo Motor Car Co.	..	..	77	79
Springfield Body Corp., com.	96	100	95	100
Springfield Body Corp., pfd.	125	135	120	130
Standard Motor Construction Co.	6½	7	7	9
Stewart Warner Speed. Corp., com.	112	114	110½	112½
Stewart Warner Speed. Corp., pfd.	..	..	..	..
Studebaker Corp., com.	132½	132½	128⅛	129
Studebaker Corp., pfd.	109½	111	111½	112
Swinehart Tire & Rubber Co.	90	96	90	92
United Motors Corp.	66	66¼	64½	64¾
U. S. Rubber Co., com.	61¼	66¾	60¾	61⅛
U. S. Rubber Co., pfd.	113¾	113⅞	110	111
White Motor Co.	54¾	55¼	55¼	56
Willys-Overland Co., com.	46	46¼	42½	42¾
Willys-Overland Co., pfd.	103⅛	103¾	103	104

DOMESTIC CRUDE OIL PRICES.

The prices of crude petroleum at the wells during the middle of the month of November were:

Pennsylvania dark	$2.60	Corsicana heavy	$.40
Mercer black	2.10	Electra	.90
Cabell	2.07	Henrietta	.95
New Castle	2.10	Caddo, La., 38°	.90
Corning	2.10	Caddo, La., heavy	.65
Wooster	1.65	Plymouth	1.08
North Lima	1.43	California oil	73 a 78
South Lima	1.43	Healdton	.40
Indiana	1.28	Moran	.95
Princeton	1.47	Strawn	.95
Somerset 32°	1.85	Thrall	.95
Ragland	.85	De Soto	.80
Illinois above 30°	1.47	Crichton	.55
Kan. & Okla.	.90	Canada	1.83
Corsicana light	1.08		

Naphtha.

	10-gal. drums Under 100 cases	10-gal. drums 100 cases and over
Benzine, 59-62°	33¼	32¾
73 a 76°	41	40½
Stove	33½	33
Auto, 68-72°	37	36½

	In cans and cases Under 100	100-199	200-299
Benzine, 59-62°	28½	28¼	28
73 a 76°	36¼	36	35¼
Stove	28¾	28½	28
Auto, 68-72°	32¼	32	31¾

NEW YORK CITY PRICES.

New York City prices for petroleum and its products were:

Petroleum.

Crude, barrels, per gallon ..... 15 a 18
Refined barrels 12
Fuel, merchantable, tanks ..... 4½ a 5¼

Tank Wagon Delivery.

Fuel, 31 degrees ..... 9 Fuel, 34 degrees 9¼

Motor Gasoline (Steel Barrels).

Garages ..... 22 V., M. & P., deod., in steel 22
Consumers ..... 24 V. M., & P., deod, in wood 24

Gasoline.

Gas machine, steel ..... 37 68-70 degrees, steel 28
73-76 degrees, steel ..... 31 68-70 degrees, wood 31
73-76 degrees, wood 34

GENERAL MARKET PRICES.

	Oct. 11	Nov. 14
Antimony	11⅛	12½
Iron, foundry, S., ton	14.50	14.50
Iron, foundry, N., ton	19.00	19.00
Iron, Bessemer, ton	20.00	25.00
Steel, Bessemer, ton	45.00	50.00
Beams and chan., 100 lbs.	2.869	2.969
Copper, elec., 100 lbs.	28.50	33.00
Copper, lake, 100 lbs.	28.50	33.00
Lead, 100 lbs.	7.05	7.02½
Tin, 100 lbs.	39.87½	43.87½
Petroleum, Penn., cr., bbl.	2.50	2.60
Petroleum, Kan., cr., bbl.	90	90
Linseed oil, raw	82	96
Rapeseed oil, refined	90	95
Lard oil, prime	1.08	1.30
Fish oil, Menhaden, br.	58	62
Sulphuric acid, 60	3.00	3.00
Cottonseed oil, bbl.	11.40	13.00
Silk, raw, Italy	6.50	6.90
Silk, raw, Japan	5.57½	6.10
Rubber, fine, up-river, Para	73	82
Tire, scrap	6¼	5¾
Steel, open hearth, ton	45.00	50.00

FOREIGN TRADE OPPORTUNITIES.

(Address Bureau of Foreign and Domestic Commerce, Washington, D. C., Giving Number, Which Will Forward Correspondence, Unless Otherwise Stated.)

Machinery, Motor Vehicles, Etc. No. 22,645—A commission firm in Spain advises an American consular officer of its desire to import from the United States machines for making buttons, hose, embroidery and crochet work; also electrical novelties, automobiles, motorcycles, bicycles, agricultural machinery, moving picture films and other merchandise of possible sale in Spain. Correspondence in English. References.

Tractor Plows. No. 22,657—A commercial agent of the bureau in Central Africa writes that a man in that territory desires to be placed in touch with manufacturers of tractor plows.

Truck. No. 22,757—An exporter in Venezuela informs an American consular officer that he is in the market for a truck or tractor of three tons capacity or less. Further information may be obtained from the bureau or its district offices.

Automobile Accessories, Etc. No. 22,766—An American consular officer in Venezuela writes that a manufacturers' agent in his district desires to represent American manufacturers of automobile accessories and supplies. Other lines are desired later.

Automobiles, Etc. No. 22,795—An American consular officer in Venezuela reports that the proprietor of an automobile garage in his district desires to obtain the agency for a low priced automobile and for greases, tires and other supplies. Correspondence in English.

Automobile Accessories. No. 22,861—An established firm in Switzerland is desirous of representing American manufacturers of automobiles and accessories and machinery and technical novelties, etc. References.

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Penalty of Speaking Falsely of a Competitor or of a Business Man Not a Competitor.

By ELTON J. BUCKLEY.

I have read in magazines from time to time of the penalties for various legal offenses, but have never had the pleasure of reading what the penalty is, or should be, if one man should knowingly send out a false statement that would have a tendency to destroy the credit of another. For instance, I know a watchmaker and jeweler in a country town who is a master of his profession, has a jewelry store that is a credit to the town—in fact, the best store the town has ever had. His store is paid for and he discounts all his bills. Now if, knowing the facts as I do, I should publish the story that this man carries no stock, does not always pay his bills promptly and is only a practical workman, what is the penalty for such an offense, or what should it be? Are there any United States Supreme Court decisions applicable to such a case, or what is the law pertaining to such an offense?

THIS correspondent asks about a jeweler, but I suppose I need not say that the legal principles involved here are the same no matter what line it is.

The correspondent seems to have an idea that the offense he speaks of is in itself a criminal offense, separate and distinct from other libels. That is not the fact. Aspersing the credit of a solvent merchant, or his ability as a master of his craft is a civil offense, and it may even be a criminal offense, but it is merely one of the class of punishable libels or slanders.

There are three aspects of such an offense.

1—The criminal libel (or slander) aspect.

2—The civil libel (or slander) aspect.

3—Misuse of the United States mails.

Such an offense could offend against the law in all three respects. If it offends against the first and third it would be punishable with fine or imprisonment; if it offends against the second it would be penalized by the payment of damages.

If the defamatory statement is written, it is libel; if spoken only, it is slander.

Consider No. 1. I question very much whether the language which this correspondent sets forth would be criminal libel at all. A man may be guilty of criminal libel though he speaks only the truth. The theory is that criminal libel tends to a breach of the peace, and it is therefore immaterial whether the thing said is true or not. But even if false it must be something pretty strong—stronger than this, in my judgment.

As to No. 2, this might or might not be misuse of the mails, and a criminal offense under the United States laws. Sending through the mails any matter which is "libelous, scurrilous, defamatory, threatening, or calculated in any way to reflect injuriously upon the character or conduct of another," is misuse of the mails. But the matter must be exposed to the public gaze. If it is sealed inside of an envelope or a wrapper, it makes no difference how libelous it is, it is not misuse of the mails and the postal authorities will take no notice of it.

If this correspondent wrote the above on a postal card, he might or might not be guilty of misuse of the mails. I say he might not, because this language is a little weak from a criminal offense, in my judgment.

What this offense really is, is trade libel, a civil offense only. The law is pretty uniform about trade libel throughout the United States. Words which when spoken or written of an ordinary individual might not be slander or libel at all, would at once become so if spoken of a man in connection with his business, trade, profession or calling. A good definition of trade libel is—"any words spoken or written of a person in his office, trade, profession, business or means of getting a livelihood, which tend to expose him to the hazard of losing his office or position, or which charge him with fraud, indirect dealings, or incapacity." Such statements can be sued for even if no damage has occurred, because they tend to injure him in his trade, profession or business. In other words, the charge must be such that if true, would render him less qualified to carry on his business.

The law is especially tender with the reputations which men have won in business and will sharply punish anybody who destroys or injures them. To falsely say that a business man is in financial difficulty, or is dishonest, or a fraud, or has been guilty of any other practise which if true would make him a poorer manufacturer, merchant, clerk or artisan than he would otherwise be, is to be guilty of trade libel.

There is a case which holds that it is not a trade libel to say that a merchant does not pay his debts, because even if he didn't he could still be a first class merchant so far as the public was concerned. But where you run him down generally—say that he has a poor store, doesn't keep a stock, and in fact is a poor, one-horse merchant, besides not paying his debts, you paint a picture of slackness, inefficiency and poor credit, which any court would almost certainly call a trade libel. Always provided, of course, that it was untrue. If true, it is not a civil libel at all.

If the court held it to be a trade libel, it would allow damages even though no actual damages were suffered. The libel law knows two sorts of damages, general and special damages. Special damages are actual damages—those which do not necessarily follow from libel, but which may follow. If they have followed, no matter what the circumstances, they can be collected. An example would be where one merchant, speaking of a competitor, said to one of the latter's customers, "he is notorious in the trade for the shoddy goods he sells," and the customer, believing it, took his trade away. In many cases no damages except those which have actually happened, such as the above, or the loss of a position or of a contract, can be collected. If no damages can be proven, none can be collected.

But in trade libels it is not necessary to prove special (actual) damages; the law allows what it calls "general damages." General damages are those which the law holds necessarily follow from the speaking or writing of false words about business men. In other words, if I say to a jobber, speaking of a retailer, "I consider him financially weak," the law considers that I have inevitably done that man some injury—that I have in part destroyed the good opinion which the jobber had of him, even if the jobber did not take any business notice of what I said. Therefore, because there is this inevitable injury, which cannot be estimated in money, the jury which tries such a case will be allowed to give the plaintiff such a sum as it thinks will make him feel good again. This is the sort of damages which can be recovered in actions for trade libels.

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ARE you in need of legal advice? Do you want first class professional service at no cost to yourself? If so, address a letter to Mr. Buckley, in care of the Legal Department of the Accessory and Garage Journal, detailing your troubles as clearly as possible. He will give immediate answer, either on this page, for the benefit of other subscribers who may have the same trouble, or direct by mail, as the inquirer specifies. The writer should sign his full name and address, but only initials or a pseudonym will be published in these columns. The service is free to subscribers to this magazine.

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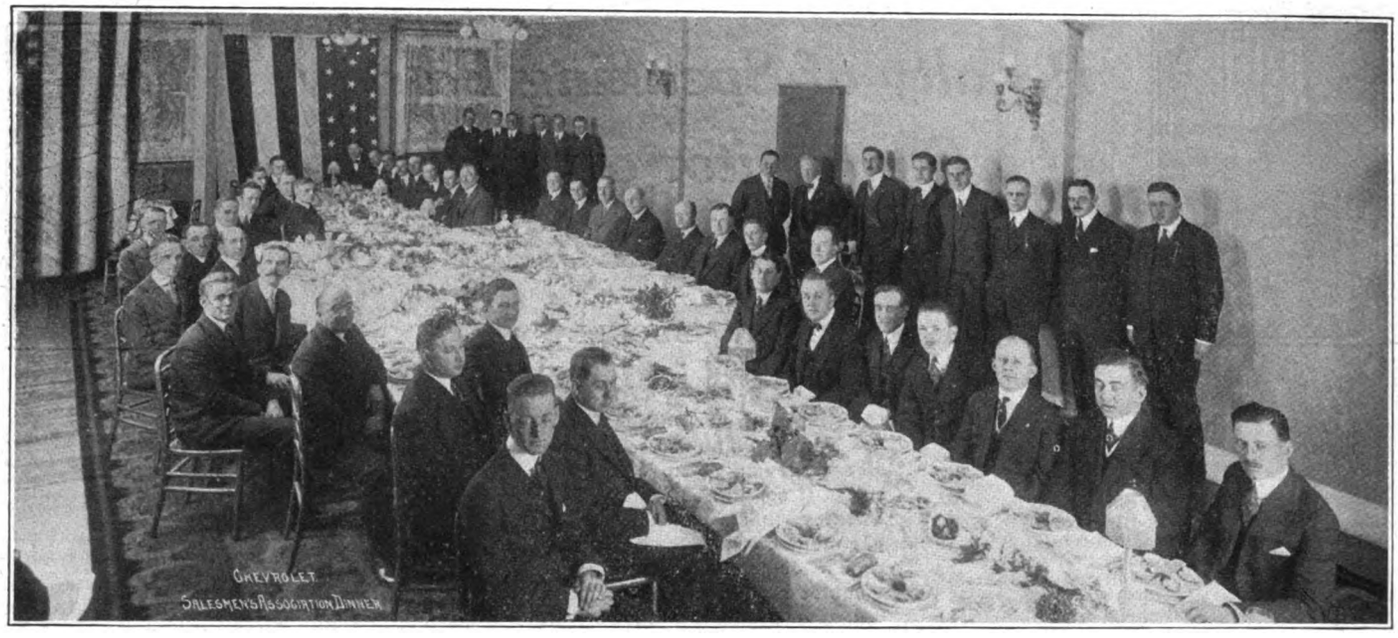

Chevrolet Salesmen's Association at the Banquet Table in the Hotel Marie Antoinette, New York City, Nov. 9.

HAPPENINGS AMONG THE CAR AND PARTS MAKERS.

What Several of the Leading Manufacturers in the Motor Vehicle Industry and Allied Lines Are Doing or Have Under Consideration.

The American Chain Company, Bridgeport, Conn., manufacturer of Weed tire chains, has purchased the Standard Chain Company, Pittsburg, Penn. Plans for combining the sales organizations and part of the office forces of the two companies are in preparation.

The Anderson Electric Car Company, Detroit, Mich., has increased in business during the fiscal year amounting to 141 per cent. For four months car shipments have been 75 per cent. greater than for a similar period in 1915 and it is expected that the company's business for the current year will be 100 per cent. greater than last year. The directors of the company are W. C. Anderson, M. S. Towson, J. B. Book, Jr., G. M. Bacon, G. D. Fairgrieve, W. M. Locke, W. P. McFarlane, W. H. Murphy, F. E. Price.

The Madison Motors Company, Anderson, Ind., has purchased the wagon and buggy plant of the Anderson Carriage Company. This will be used for manufacturing and finishing bodies and tops and also for final assembly. This addition will give the company 175,000 additional square feet of floor space.

The King Motor Car Company, Detroit, Mich., has raised the prices of its products. The sedan selling for $1900 now sells for $1950, and the seven-passenger touring car and the three-passenger roadster, both of which were $1350, have been raised to $1400. This is caused by constantly increasing cost of material.

The Aniser Manufacturing Company, St. Joseph, Mo., has changed its corporate name to the Mechanical Belt Company and is marketing Crown fan belts. L. D. W. Van Vliet is president. The other officers are: Secretary and treasurer, H. D. Gilbert; sales manager, O. G. Young, Jr.; directors, J. D. Richardson, J. E. Dolman and the officers.

The Vail Rubber Company, Chicago, Ill., manufacturer of pneumatic tires, packing gaskets and mechanical rubber goods, has changed its name to the Ehman Tire and Rubber Company. C. Ehman is president, the other officers being Francis Lackner, vice president, and N. J. Flynn, treasurer.

The Olds Motor Works, Lansing, Mich., is making preparations for the manufacture of 20,000 motor cars in 1917. Plans have been made for the extension of the plant to meet the demand for greater productive facilities. The capacity of the loading platforms is being doubled, new railroad sidings are to be built and 50,000 square feet are to be added to the factory's floor space.

The Nu-Way Puncture Cure Company, Green Bay, Wis., has been organized with a capital stock of $20,000 to manufacture a fibrous compound for automatically sealing punctures. R. C. Moore is the inventor. Offices have been opened at 403 West Walnut street.

The Racine Auto Tire, Racine, Wis., organized to manufacture tires, tubes and rubber goods, will undertake the construction and equipment of a large new plant to enable the company to handle the fast growing volume of business. The present force of 125 work men will be doubled and the production of 250 tires and tubes per day increased to 600 of each.

The Mayo-Skinner Manufacturing Company has moved to 2115 Elston avenue, Chicago, Ill., and has greatly increased its equipment and facilities for the manufacture of hand pumps, spark plug pumps, air compressors and electric garage pumps.

The Fulton Company, Milwaukee, Wis., has taken over the entire output of the manufacturing plant of the C. & E. Manufacturing Company of Marshalltown, Ia., whose principal lines are cut outs, wheel pullers, accelerators, foot pedals, fender braces for the jobbing trade in the United States and Canada, in connection with the line of Aermore exhaust horns, spark plugs and Fulton B. B. mud hooks.

The B. F. Goodrich Company, Akron, O., has declared a dividend of $1.75 per share on preferred, payable Jan. 2, 1917, to stock of record Dec. 21, 1916, and a regular quarterly dividend of $1 per share on common stock, payable Feb. 15, 1917, on stock of record Feb. 2, 1917.

The Peru Auto Parts Manufacturing Company, Peru, Ind., has increased its capital stock from $200,000 to $500,000.

The Continental Auto Top Manufacturing Company, St. Louis, Mo., has doubled its capital stock.

The Ghent Motor Car Company, Chicago, Ill., is planning to start the manufacture of its cars in the S. G. Gay factory at Ottawa, Ill. The plant will afford facilities for making seven or eight cars a day. C. A. Ghent is president of the company, F. R. Koons is vice president and general superintendent and M. L. Buckett secretary. The car that is to be made will appear in two models, a "Four-Thirty" at $600 and an "Eight-Forty" at $800.

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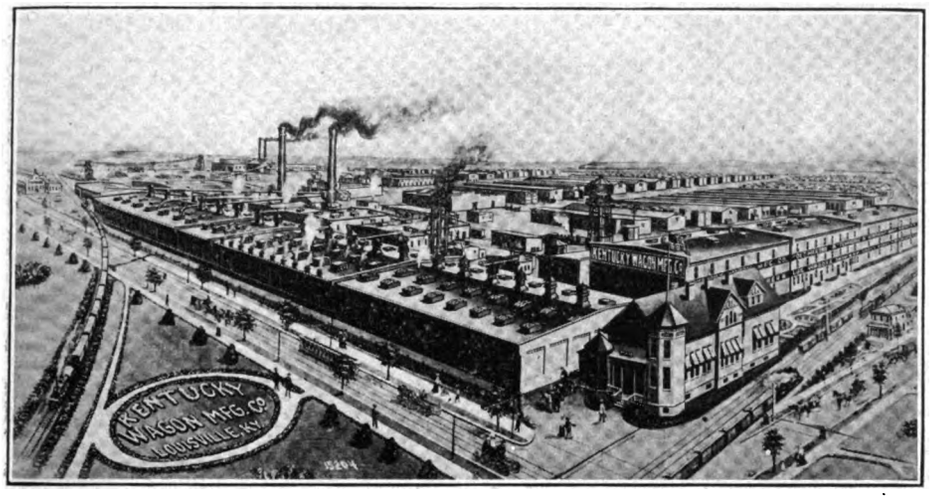

Where the Dixie Flyer Is Made, the New Company Being Known as the Dixie Motor Car Company.

The A. B. C. Starter Company, Detroit, Mich., has increased its capital stock from $150,000 to $250,000 and an extension of the company's facilities is to be made. The starter that the company makes, was designed by Alexander Churchward, vice president of the company and formerly consulting engineer for Gray & Davis and the General Electric Company.

The Franklin Automobile Company, Syracuse, N. Y., will spend about $1,000,000 in enlarging its plant. Three extra floors to cost $500,000 with machinery and equipment will be added to a three-story concrete building now being erected at a cost of $500,000. This will be the fifth factory addition within a year and will add six acres to the floor space of the factory. Production is now running at the rate of 10,000 cars annually and when the new additions are in operation it will be 15,000 cars. The working force will be increased by 40 per cent.

McIntyre Manufacturing Company, Columbus, O., maker of the Farm Boy Tractor, has received an order for three tractors to be shipped to London, England. The plant located at 172 West Locust street is too small for the amount of business the company is now doing and a larger plant will be erected.

The Simplex Automobile Company, New Brunswick, N. J., is planning the erection of a new plant for the manufacture of automobile bodies. The company is also considering the erection of a new factory for the manufacture of aeroplanes.

The C. A. S. Products Company, Columbus, O., which manufactures gears, has booked an order for $75,000 worth of gears from a Cleveland automobile plant. This order, with others on the books, will keep the company busy for the coming year. The concern now employs 130 men.

The Disco Electric Starter Corporation, Detroit, Mich., has reduced the price of its electric starting and lighting systems for Ford cars $10, it now selling for $65.

The Goodyear Tire and Rubber Company, Akron, O., has purchased 10,000 acres of land in the Salt river valley and is expected to go into the business of cotton raising on a large scale.

The Colonial Motors Company, Detroit, Mich., is making deliveries of motors at the rate of 5000 a year and expects within the coming year to produce from 12,000 to 15,000.

The Detroit Motor Lock Company, Detroit, Mich., has been incorporated with a capitalization of $30,000 to manufacture and license others to manufacture automobile parts. C. R. Kerns, G. M. Conner and R. W. Muir are the incorporators.

The Gasco Manufacturing Company, Lancaster, Penn., has been formed to manufacture specialties for Fords. R. W. Shreiner is president and general manager. One of the articles to be manufactured is a new cowl dash light for Fords and the company will also put out a new heater for Fords.

The Overland-Wausau Company, Wausau, Wis., a large northern Wisconsin distributor of Overland cars, has donated to the Wausau police department 15 traffic guides bearing the legend, "Keep to the Right." The guides have been placed on 15 busy street intersections and assist materially in regulating traffic.

The Kelsey Wheel Company, North Memphis, Tenn., and Detroit, Mich., will consolidate its factories by moving the Detroit plant to Memphis. This will increase the capacity of that plant, which now produces 2000 complete motor car wheels daily.

The Keller Pneumatic Tool Company, Fond du Lac, Wis., has instituted a new idea in welfare work among the employees by furnishing an ample supply of certified milk to all work men. The company thinks that the physical welfare and efficiency of the workers will be considerably increased and the injuricus effects of drinking cold water while at work or intoxicants during noon hours will be avoided.

The Willard Storage Battery Company, Cleveland, O, has completed the first of the buildings being erected to permit the handling of its rapidly expanding business. A second new building, upon which work has been begun, will have two stories and 75,000 feet of floor space, and will be used for offices, machine shop and store rooms.

The White Motor Company, Cleveland, O., has declared a quarterly dividend of two per cent., placing the stock on an eight per cent. basis, instead of the former seven per cent. The dividend is payable Dec. 31 to stock of record Dec. 15.

The Crow-Elkhart Motor Company, Elkhart, Ind., has been elected to membership in the National Automobile Chamber of Commerce. It will exhibit at both the New York and Chicago shows.

The Herschell-Spillman Company, North Tonowanda, N. Y., will more than double the capacity of its present plant by the additions which are nearing completion. Quantities of 3000 to 10,000 engines can be economically produced, especially those of small and medium sized bores.

The Pennsylvania Rubber Company, Jeannette, Penn., will establish sales districts as follows: Southern district, D. D. F. Yard; Central States, J. W. Goudie; the West, C. F. Kent; Pacific Coast, J. F. Madden; Pennsylvania district, C. M. DuPuy, vice president.

The New Home of the Mayo-Skinner Manufacturing Company.

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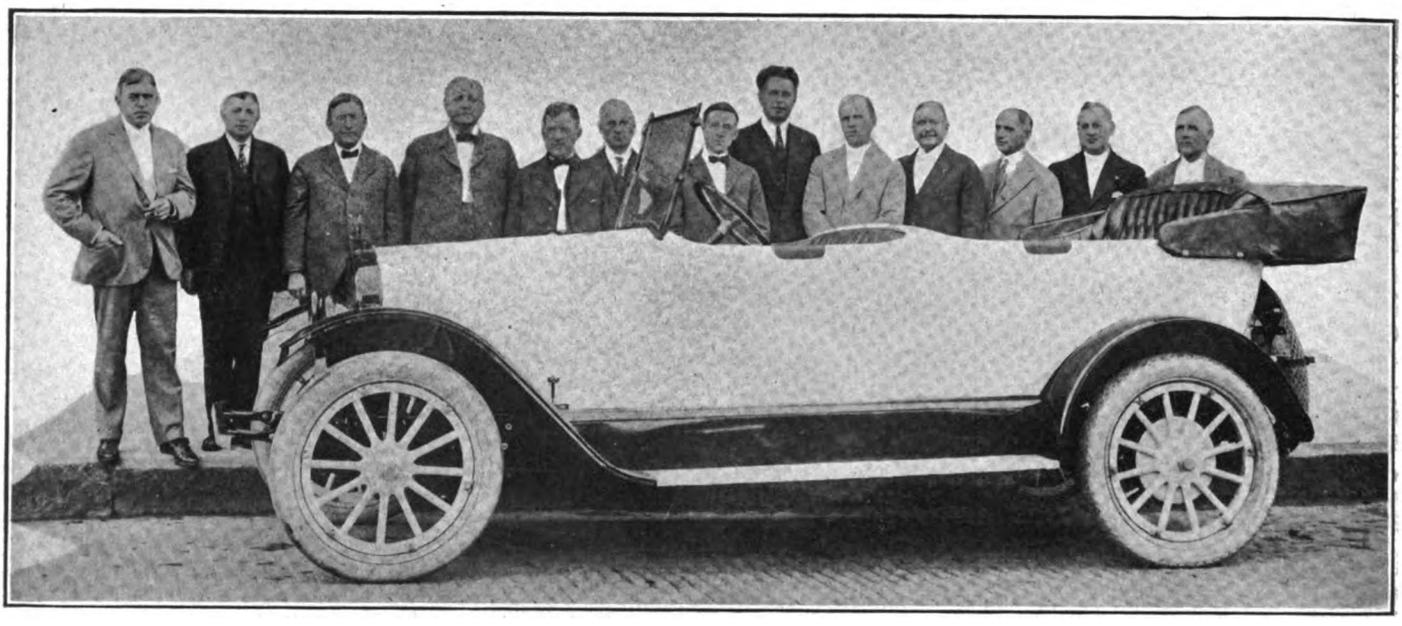

The Men Behind the Yale Eight, the Board of Directors of the Saginaw Motor Car Company of Michigan, That Produces This Car. From Left to Right They Are: E. C. Forrest, W. C. Wiechmann, Secretary; E. L. Beach, O. L. Dittmar, M. N. Brady, J. R. Liebermann, E. B. Sutton, L. J. Lampke, General Manager; B. G. Appleby, J. W. Grant, Vice President; J. A. Climmerer, President; Harry Oppenheimer, Treasurer; Henry Witters. Mr. Sutton Is Not a Director, but Is Head of Sales and President of the E. B. Sutton Sales Company, the Sole Distributor of Yale Eights.

The Adams-Bagnall Electric Company of Cleveland, O., is now completing an addition to its factory in the form of a complete porcelain enameling plant, which is being equipped for all classes of high grade work. A battery of four 12-foot furnaces will be supplemented with complete equipment of mixing vats, smelting furnaces, drying ovens and handling apparatus capable of producing a large output.

The Fisher Body Corporation has purchased one building of the Regal Motor Car Company's plant near the main Fisher plant in Detroit. The company is turning out about 60 per cent. of all closed automobile bodies now being made in the United States. To take care of the increased production it is necessary for the company to add two large buildings, one, costing $260,000, for general body construction, and one, valued at $225,000, for service and repair departments.

The Amazon Tire and Rubber Company, Akron, O., has found it necessary to increase its floor space. The factory is at present turning out about 45 tires a day and when the new four-story brick building is completed the production will average 300 tires daily.

The Selden Truck Sales Company held its annual meeting at the company's offices in Rochester, N. Y., and the following directors were elected: George C. Gordon, Wm. C. Barry, Jr., Robert H. Salmons, Henry G. Strong and Charles H. Stearns. All the old officers were reelected. The company's new selling plan was approved and to make it more interesting it was announced that the October business showed an increase of 349 per cent. over the same period in 1915, this increase covering domestic shipments only.

International Rubber Company, South Bend, Ind., maker of automobile tires, will soon complete the erection of its new plant. The building with its equipment involves an expenditure of about $200,000 and is located on the Vandalia tracks and Edwin boulevard. The company has established 1500 selling branches.

The Bull Tractor Company, Minneapolis, Minn., will hold its annual convention of the Bull Tractor distributors at the offices of the company Dec. 12 and 13.

The J. I. Case Plow Works, Racine, Wis., has published a catalogue called "The Plowman." The cover design, which is in two colors, is especially attractive.

The Swiss Magneto Company, Chicago, Ill., has acquired the Elkhart Manufacturing Company's buildings at Monroe, Mich., and will continue to operate business. The manufacture of the Elkhart line of high and low tension magnetos will be continued on an increased scale.

The Auto Specialty Company, Milwaukee, Wis., manufacturer of parts, accessories and supplies, will build an addition to cost about $20,000. It will be 47 by 100 feet in size and one story high.

The Bullock Tractor Company, Detroit, Mich., has secured 2000 acres of land in Schoolcraft county, Mich., and will demonstrate tractors in farming operations. Practically all of the work on the farm will be done by motor power.

The Harroun Motors Corporation, Detroit, Mich., has broken ground for its first building in Wayne county. The structure will be 550 by 75 feet, two stories high and will have a wing of sawtooth construction. 140 by 600 feet and one story high. Both buildings will be built of brick and steel.

The Auto Wheel Company, Lansing, Mich., has increased its common stock capitalization from $300,000 to $500,000, and the funds derived from the increase will be devoted to new buildings. The officers of the company remain the same and include E. S. Porter, president; Harry E. Bradner, vice president; Drury L. Porter, secretary and treasurer, and John Winters, superintendent.

The Four-Wheel Drive Auto Company, Clintonville, Wis., has increased its production to four trucks per day and by January it is expected that sufficient new equipment and tools will have been delivered to make possible an output of six trucks each day. The company has a standing order for 20 cars daily for export. The domestic demand is increasing faster than the factory can handle it.

The Anger Engineering Company, 301-303 16th street, Milwaukee, Wis., specializing in custom built automobiles, will build a larger plant at 26th and State streets. It will be a one-story structure, 120 by 130 feet. B. F. Anger is general manager.

The Templars Motors Corporation, Cleveland, O., has been formed and will manufacture a four-passenger touring roadster at $1250, a five-passenger touring car at $1250, a five-passenger sedan at $1850 and a two-passenger roadster at $1225.

The Haynes Wheel Company, Jackson, Mich., has increased its capitalization from $1,000,000 to $1,500,000. The increased fund will be used for additional machinery and equipment for the manufacture of wire wheels.

The Monarch Tractor Company, Chicago, Ill., has taken over the John Dornfield Iron Works, Watertown, Wis. The Monarch company is capitalized at $250,000 and now has more than $400,000 worth of orders booked. The tractor is styled the "Never-Slip," and is built in sizes from six to 50 horsepower.

The Sandusky Tractor Company, Sandusky, O., has opened a Western agency at Bloomington, Ill., and has established offices and a warehouse for handling the machines in Illinois and bordering states.

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Activities of Prominent Men of the Industry.

Resignations, Promotions and Other Changes in Personnel of Motor Vehicle Manufacturing and Merchandising Companies and Allied Businesses.

F. H. Whitman, Indianapolis, Ind., has been appointed production engineer of the National Motor Vehicle Company. He was formerly with Dodge Brothers of Detroit.

E. Ver Linden, Lansing, Mich., has been elected president of the Olds Motor Works. Mr. Ver Linden, formerly general manager of Olds, has been in the automobile business for a number of years and is thoroughly familiar with the problems of the industry.

H. C. Clarke, formerly with the Crescent Automobile Company, distributor for the Cadillac Motor Car Company for northern New Jersey, has joined the Sterling Top and Equipment Company, Inc., and will act as their New Jersey representative.

Frank K. Dolbeer, formerly of the financial department of the Victor Talking Machine Company, has been elected treasurer of the Willys-Overland Company, to succeed Walter Stewart, who has resigned.

Robert W. Mickam has been appointed advertising manager of the Liberty Motor Car Company. Mr. Mickam for the last two years has been advertising manager of the Ford Motor Company of Canada, Ltd. Before that he was in charge of the advertising department of the Ford Motor Company in Detroit.

L. M. Bradley, advertising manager of the American Motorist, has been elected general manager of the Motor and Accessory Manufacturers' Association, New York City, succeeding William M. Sweet, who has resigned to go with the United Motors Corporation as assistant to the president. Mr. Bradley has had a wide and varied motor car experience, having been associated with the industry since its inception.

H. S. Farish, with the Abbott Corporation.

H. S. Farish is now assistant to the president and general manager of the Abbott Corporation. He is also performing the duties of purchasing agent for the company.

E. E. White is now purchasing agent of the Empire Automobile Company. He has been associated in a like capacity with various Indianapolis manufacturers for the past 12 years. The Empire company will complete the most successful year of its history and is planning for an even bigger season for 1917. Mr. White will have supervision of all buying.

E. L. Baker of Indianapolis has been appointed president and general manager of the recently organized New Madison Sales Company, which will distribute Madison sixes in Indiana. The concern was recently reincorporated with a capitalization of $2,000,000.

Forrest J. Alvin has been elected president and general manager of the Schoeneck Company, Chicago and Harvey, Ill., manufacturers of the Geneva Six. Mr. Alvin has been with the United States Motor Truck Company at Covington, Ky., as general sales manager.

G. C. De Craw, formerly manager of the National Sewing Machine Company, has been appointed sales manager of the Utility Manufacturing and Advertising Company, Chicago, manufacturers of Johnson lever locks.

A. C. Schulz has been appointed chief engineer of the Mercer Automobile Company of Trenton, N. J. He was formerly connected with the Locomobile Company of America in the capacity of assistant chief engineer for 14 years.

A. J. Banta, for 12 years general manager of the central western territory district for the Locomobile Company of America, has resigned from that position to become vice president of the Premier Motor Corporation of Indianapolis.

Fred Berger has been appointed chief of the engineering department and Alfred Thompson, factory and production manager of the Abbott Corporation, makers of Abbott cars.

W. L. Agnew has been appointed director of advertising of the Chalmers Motor Company. Mr. Agnew is one of the best known advertising men in the automobile industry and for the past four years he has been advertising manager for the Hudson Motor Car Company. Before joining the Hudson company he was a prominent member of the copy staff of Lord & Thomas, Chicago advertising agents.

J. Murray Page is now manager of the Chicago branch of the Locomobile Company of America. He was formerly manager of the branch at Los Angeles, Cal. He entered into the service of the Locomobile company in 1899 and has been with it ever since.

C. E. Stowe has been appointed comptroller of the Olds Motor Works, Lansing, Mich. He was formerly auditor and has been with the company several years.

Frank M. Eldredge, well known as the advertising manager of the Detroiter Motor Car Company and active in motor vehicle organizations in Detroit, is also acting as the manager of publicity for the new Wallace A. Hood Service Bureau of Detroit.

L. M. Bradley, General Manager, M. & A. Manufacturers' Association.

Frank M. Eldredge, Publicity Director of Hood Bureau.

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J. W. Engel is now manager of the sales promotion department of the Olds Motor Works, Lansing, Mich. Mr. Engel is the originator of an extensively used national system for gathering reports on dealers. Before entering the motor car field he was in newspaper work.

A. D. Plughoff has resigned as vice president of the Willys-Overland of California. He will again be associated with J. W. Levitt, handling motor cars on the Pacific coast.

R. P. Ford has been appointed sales engineer of the Peerless Motor Car Company. He has been connected with the motor car industry since 1906, beginning at that time with the Overland company at Indianapolis, Ind.

T. L. Coleman, formerly of the Goodyear Tire and Rubber Company, New York City, has become sales manager of the Chevrolet Motor Company of Canada, Oshawa, Ontario. He succeeds H. Horsman, who recently resigned.

S. R. Scott has been appointed district sales representative for Denmo trucks by the Denneen Motor Company. Mr. Scott is well known throughout the motor truck trade, having been associated with the White company for several years and more recently with the Warner-Swasey Company as assistant works manager.

Chester S. Ricker was elected president of the Ricker Oil Company, which was recently incorporated at Indianapolis, Ind. Mr. Ricker has had experience in designing both motors and automobiles and as technical representative of the Indianapolis Motor Speedway he has had an unusual opportunity to compare and test different oils.

H. H. Brooks has been appointed superintendent of agencies at the Madison plant, Anderson, Ind. Mr. Brooks was one of the original incorporators of the Marathon Motor Works, Nashville, Tenn., where he served several years as sales and advertising manager.

F. E. Edwards, Chicago, Ill., has joined the Automatic Carburetor Company as efficiency engineer. Mr. Edwards has been chairman of the technical committee of the American Automobile Association. He is widely known in American motor racing circles.

N. L. LeBlond, formerly secretary and general manager of the Hannibal Motor, Wagon and Body Company, Hannibal, Mo., has been appointed western manager of the Dearborn Motor Truck Company and will make his headquarters in Kansas City. Augustine Gilmore, formerly of Chicago, succeeds Mr. LeBlond in the Hannibal company.

Morgan J. Hammers has been retained as consulting engineer for the Hackett Motor Car Company, Detroit, and has been appointed a non-resident director of the company.

J. Livingstone has been appointed manager of the Cleveland retail branch of the Maxwell Motor Company. He was formerly assistant branch manager for the Studebaker Corporation at Indianapolis and Omaha.

R. J. Firestone, Vice President, Firestone Tire and Rubber Company.

R. J. Firestone at the annual directors' meeting was elected vice president of the Firestone Tire and Rubber Company. He has been sales manager of the Firestone company for practically 10 years.

Fred A. Cornell, formerly in charge of Willys-Overland service department, Indianapolis, and since then in charge of the heater department of the Perfection Spring Company, has been made assistant sales manager of the Cole Motor Car Company, in charge of the service department.

P. J. Lyons is now with the sales force of the reorganized Paige Motor Car Company of Boston. He was formerly with the Studebaker branch, Boston, and later with New York agencies.

Lynn B. Dudley has been appointed advertising manager of the Federal Motor Truck Company. He succeeds George W. Cushing, who resigned to join the advertising staff of the Hudson Motor Car Company. Mr. Dudley was formerly connected with the Campbell-Ewald Company, advertising agents.

A. G. Partridge, formerly assistant sales manager, succeeds R. J. Firestone as general sales manager of the Firestone company. F. C. Blanchard becomes manufacturers' sales manager in charge of the company's increasing business among automobile makers.

A. G. Partridge, General Sales Manager, Firestone Tire and Rubber Co.

E. H. Belden, formerly the body engineer for the Packard Motor Car Company, has been appointed the chief engineer for the Willys-Overland Company, Toledo, O.

George Cushing has entered the advertising department of the Hudson Motor Car Company. He was formerly the advertising manager of the Federal Motor Truck Company.

A. E. Gluck, purchasing agent for the Packard Motor Car Company, New York, has resigned. He has become president and general manager of the Abbott Motor Equipment Company, New York. S. S. Frankenstyne remains as treasurer and sales manager. H. T. Stevenson succeeds Mr. Gluck as Packard purchasing agent and W. C. Lyons takes up his work as head of the accessory department.

F. E. Miles has become purchasing agent of the Lewis Motor Corporation, Detroit. He was formerly connected with the National Motor Vehicle Company, Indianapolis.

J. B. Bray has accepted the position of service manager for the Grant Motor Car Corporation, Cleveland. He was formerly purchasing agent for the United Motors Company.

F. R. Humpage has resigned as manager of the Dyneto Electric Company, Syracuse, N. Y., to become affiliated with the Wilt Twist Drill Company, Waterville, Ont. He will serve in the capacity of secretary-treasurer and general manager.

R. S. Wiltrout has been appointed efficiency manager of the Crow-Elkhart Motor Company, Elkhart, Ind. He was formerly manager for the John W. Blackledge Manufacturing Company, Chicago, Ill. Mr. Wiltrout was with the Stewart-Warner Speedometer Corporation for several years.

H. H. Cobe has joined the Burd Ring organization in Boston. He started in the business in 1903 and has been connected with the Haynes Automobile Company, Kokomo, Ind.; Locomobile, Jackson, Palmer Singer, G. & H. Carburetor Company and the Curtiss Aeroplane Company. In 1907 he went into the racing game and for a time teamed with Ralph Mulford for the Lozier company.

H. J. Sproat is now works manager of the Olds Motor Works, Lansing, Mich. He will have entire charge of the producing organization of the Oldsmobile factory.

B. R. Miller has resigned as manager of the San Francisco branch of the Bosch Magneto Company and Lee C. Carlton, previously in the engineering department at the main office in New York, has been appointed to take his place.

Charles Clapp has joined the sales force of the H. E. Throne Auto Company, Toledo, O., distributor for Mitchell cars. He has been associated with the Throne agency for three years, having conducted the Monroe Garage at Monroe.

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NATIONAL TRADE INFORMATION EXCHANGE.

Opportunities for Car and Accessory Manufacturers, Jobbers and Dealers which Have Been Reported from All Parts of the United States During the Past Month.

GASOLINE PLEASURE CARS.

Kankakee, Ill.; George W. Libby, corner Court street and West avenue, wishes to correspond about gasoline pleasure car agencies; selling price, $500 to $700.

Grand Rapids, Mich.; The Western Michigan Paige Company is interested in gasoline cars; selling price, $2000.

Lincoln, Neb.; Weiler Packing Company desires agency for gasoline cars; selling price, $700 to $800.

GASOLINE COMMERCIAL CARS.

Lincoln, Neb.; Weiler Packing Company is interested in gasoline commercial cars; selling price, $600 to $675.

ACCESSORIES AND EQUIPMENT.

Denver, Col.; The White-Walker Motor Company, 3003-3009 Welton street, wants arbor presses, bulbs, chains, dimmers, drills, patches, plugs, reamers, recording time clocks, speedometers, waste. The products are to be used for accessory stock and shop equipment.

Kankakee, Ill.; George W. Libby, corner Court street and West avenue, would like to secure bumpers, goggles, greases, maps, paints, printed matter, oils, tire accessories, vulcanizers, wearing apparel.

Odell, Ill.; Frank Zebell is interested in carburetors, cylinder machines, drills, engines, grinders, greases, guns, threshing machinery, motors, spark plugs, drill presses, oils, grain separators, shapers, shock absorbers, tires. The products are to be used for job work, threshing machines and repair work.

Amesbury, Mass.; The Bela Body Company is in the market for fasteners, lamps, leather, locks, machinery for woodwork and sheet metal work, paints, seats, springs, switches, trimmings, upholstery, windshields. The products are to be used for automobile bodies.

Haverhill, Mass.; J. Raymond Lane, 40 Emerson street, wants bulbs, bumpers, chains, horns, tire accessories, tires, seat covers. The products are to be carried in stock and for sale.

Grand Rapids, Mich.; The Western Michigan Paige Company is desirous of securing bulbs, bumpers, goggles, heaters, horns, polishes, printed matter, searchlights, soaps, turntables and special bodies for pleasure cars.

Lincoln, Neb.; Weiler Packing Company wants air compressors, air pumps, anvils, autogenous welding equipment, batteries, bearings, bolts, brakes, bulbs, bumpers, cable, carburetors, cements, chains, charging apparatus, coils, dimmers, drills, fire extinguishers, forgings, gaskets, goggles, headlights, heaters, hoists, horns, hose, hubs, ignition, jacks, lamps, lathes, locks, lubricators, magnetos, maps, mechanical starters, mufflers, plugs, polishes, primers, printed matter, pullers, pumps, punches, races, removers (carbon), rims, searchlights, seats, storage systems, switchboards, switches, timers, tire accessories, tires, tools, vises, vulcanizers, waste, whistles, wire, wrenches.

Horseheads, N. Y.; James McCleary & Son is interested in air compressors, air pumps, asbestos, batteries, bearings, bolts, brakes, bulbs, caps, carbide, castings, celluloid, cements, chains, clamps, clips, clutches, coils, collars, cones, couplings, cups, drills, fans, fenders, fire extinguishers, forgings, frames, gaskets, gauges, gears, goggles, graphite, greases, guards, headlights, horns, hose, injectors, jacks, joints, knuckles, lamps, levers, lubricators, metal parts, mufflers, nuts, oils, packing, paints, patches, pinions, plugs, polishes, primers, pumps, punches, radiators, ratchet drills, reamers, removers (carbon), rubber, scrapers, screws, shims, soaps, solder, springs, steering wheels, strainers, tape, testers, timers, tire accessories, tires, transmissions, tubing, valves, vises, washers, wheels, whistles. The goods are to be used for repairing of autos and for supplies.

Cincinnati, O.; The Barlow-Hudson Motor Car Company is in the market for air compressors, air pumps, jacks, printed matter, soaps and special bodies for commercial cars.

St. Mary's, O.; The Jasperson Supply Company is anxious of securing anti-rattlers, banding, batteries, belts, bulbs, bumpers, cabinets, cable, cans, caps, carbide, cements, chains, charging apparatus, coils, connectors, fire extinguishers, gaskets, gasoline, gauges, greases, generators, goggles, graphite, headlights, horns, hose, hydrometers, ignition, indicators, jacks, lamps, maps, oils, patches, plugs, polishes, primers, pumps, removers (carbon), screws, searchlights, shock absorbers, soaps, sockets, speedometers, springs, starters, storage systems, switches, tape, terminals, testers, tire accessories, tires, tools, vulcanizers, waste, wearing apparel, wrenches. The goods are to be used for stock.

Womelsdorf, Penn.; George Hicks is interested in air compressors, air pumps, anvils, asbestos, axles, banding, batteries, bearings, belts, bodies, boilers, bolts, brakes, brushes, bulbs, bumpers, burners, cabinets, cable, cans, carburetors, celluloid, charging apparatus, chemical tanks, clamps, clips, coils, connectors, couplings, cranes, cups, cutters, cylinder machines, cylinders, dimmers, drills, dynamometers, dynamos, fire extinguishers, gaskets, gears, generators, glass, goggles, graphite, grinders, guns, hammers, headlights, heaters, hoists, hydrometers, ignition, indicators, injectors, jacks, jigs, lathes, maps, mechanical starters, motors, mufflers, odometers, packing, paints, pinions, pins, pistons, platinum, plugs, presses, printed matter, pumps, punches, rectifiers, rubber, scrapers, screws, searchlights, separators, shafting, shapers, shims, sockets, speedometers, springs, stampings, starters, storage systems, strainers, switchboards, switches, tape, terminals, testers, transmission, vises, voltmeters, vulcanizers, washers, wearing apparel, wheels, whistles, windshields, wire, wrenches and special bodies for commercial cars.

Knoxville, Tenn.; H. L. Michaels is interested in bolts, charging apparatus, clutches, fenders, gears, hose, nuts, platinum, presses, transmissions and special bodies for pleasure and commercial cars.

Bremond, Tex.; Central Garage wants anti-rattlers, arbor presses, asbestos, autogenous welding equipment, batteries, bearings, belts, bolts, brakes, brushes, bulbs, bumpers, burners, cabinets, cable, cans, cases, celluloids, cements, chains, clamps, clips, connectors, drills, fenders, fire extinguishers, gaskets, gasoline goggles, graphite, greases, heaters, hoists, hose, jacks, locks, metal parts, nuts, packing, patches, pedals, plugs, racks, reamers, rims, shims, sockets, solder, springs, storage systems, switches, tanks, tape, terminals, testers, tire accessories, tires, tools, trimmings, tubing, valves, vulcanizers, waste, wearing apparel, windshields, wire, wrenches. The products are used for wholesale and retail.

Fort Worth, Tex.; Hubb-Duggs Company, 200 Commerce street, is in the market for autogenous welding equipment, bumpers, carburetors, emblems, fire extinguishers, glass, locks, plugs, presses, reamers, recording time clocks, speedometers, starters, tires.

Jennings, Okla.; O. B. Kizer is anxious to secure air compressors, air pumps, anvils, autogenous welding equipment, axles, banding, batteries, belts, bolts, brakes, bumpers, camshafts, cans, caps, carburetors, casting, cements, chains, charging apparatus, chemical tanks, clamps, clips, clutches, coils, commutators, couplings, cranes, cups, cylinders, drills, elevators, fans, fenders, fire extinguishers, forgings, gasoline, gauges, gears, goggles, hoists, hose, hubs, ignition, jacks, lubricators, magnetos, mufflers, nuts, packing, patches, pedals, pinions, pins, pistons, platinum, plugs, polishes, pulleys, pumps, radiators, ratchet drills, reamers, removers (carbon), screws, shafting, shims, shock absorbers, soaps, sockets, solder, springs, steering wheels, storage systems, strainers, tanks, tape, terminals, timers, tire accessories, tires, tools, tops and parts, transmissions, trimmings, tubing, upholstery, valves, vaporizers, varnishes, vises, vulcanizers, washers, waste, wearing apparel, windshields, wire, wrenches.

Chicago, Ill.; Centaur Motor Company is in the market for batteries, bulbs, bumpers, cases, chains, connectors, gasoline, hammers, hose, nuts, oils, packing, patches, printed matter, pumps, punches, ratchet drills, reamers, regulators, removers (carbon), rubber, screws, searchlights, shafting, soaps, solder, speedometers, springs, storage systems, terminals, tire accessories, tires, tools, washers, wire, wrenches. The products are to be used for supply to the trade.

Olyphant, Penn.; Elmer W. Roberts is interested in air compressors, air pumps, asbestos, autogenous welding equipment, axles, batteries, bearings, belts, bodies, bolts, bulbs, carburetors, celluloid, chains, charging apparatus, clamps, clips, coils, cylinders, dimmers, discs, doors, drills, engines, fans, fenders, fire extinguishers, frames, gaskets, gasoline, gauges, gear cutting machines, greases, headlights, hoists, horns, hose, hubs, hydrometers, jacks, knuckles, lamps, lathes, magnetos, mechanical starters, oils, pumps, radiators, rectifiers, reflectors, removers (carbon), rims, scrapers, searchlights, seats, shock absorbers, soaps, speedometers, springs, starters, steering wheels, storage systems, switchboards, switches, tanks, tape, terminals, timers, tire accessories, tires, tools, tops and parts, transmissions, trimmings, tubing, turntables, vulcanizers, washers, wheels, whistles, windshields, wire, wrenches and special bodies for pleasure and commercial cars.

SPECIAL OPPORTUNITY.

Havana, Cuba; Cuban Importing Company, Amargura 16, is anxious to get in touch with manufacturers of motor trucks not already represented in Cuba. The company has a large and efficient sales force and covers the entire island.

Brookston, Ind.; M. E. Bennett would consider the agency for Dodge cars in the territory of Prairie and Round Grove Trip and White county, Indiana.

Lincoln, Neb.; Weiler Packing Company wants the agency for the Emerson car in the territory of all Nebraska or south of Plate river.

Womelsdorf, Penn.; George Hicks would consider the agency for Buick cars in the territory of Berks county, west of the Schuylkill river.

Jennings, Okla.; O. B. Kizer would consider the agency for Dodge cars in the territory of Pawnee county, Oklahoma.

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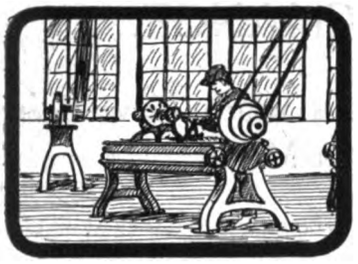
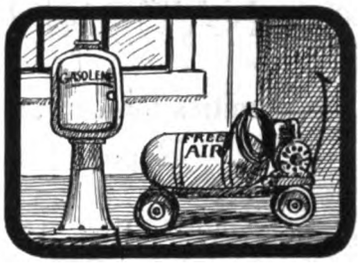


GARAGE EQUIPMENT



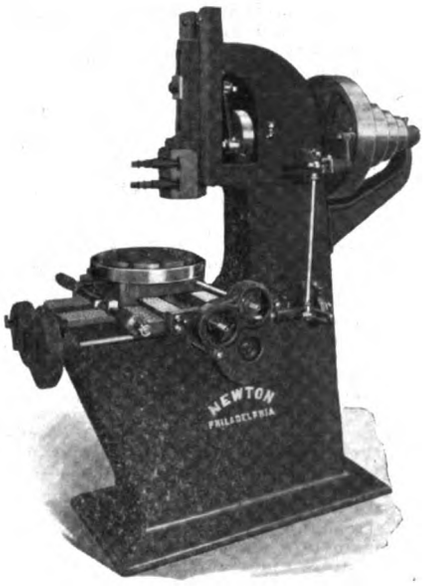
STERLING POWER HACK SAW.

For those requiring a power hack saw machine the Sterling, shown in our illustration, is worthy of investigation. In this machine the blade is automatically lifted on the return stroke to prevent breakage and is gradually placed in contact with the work on cutting stroke; the saw is stopped on the backward stroke, which throws belt from tight to loose pulley by means of an automatic shut off; it has gravity feed and has an interchangeable swivel vise, cutting to an angle of 45 degrees. The machine occupies about 17 by 32 inches of floor space and weighs about 185 pounds. The length of the blades is 10 to 12 inches, and the stroke is six inches. The machine is geared three to one and has cutting capacity of five by five inches. The vise jaws are 2⅝ by 4½ inches with a six-inch opening. This machine, like all Sterling power hack saws, may be equipped with electric motor, either direct or alternating current. Four sizes are made. Model No. 1A is illustrated herewith.

Made by the Diamond Saw and Stamping Works, 357 Seventh street, Buffalo, N. Y. Prices and illustrated literature sent upon application.

NEW SPECIAL SLOTTING MACHINE.

A new design of Newton slotting machine is now on the market. It has a stroke of five inches and is adapted to use in a tool room or work shop where a high speed of the cutting bar, ranging from 30 to 120 strokes per minute, is required. The table measures 12 inches in diameter over the T slots, while the overall diameter is three inches greater. Power feed is provided in all directions and is controlled by a friction clutch. For convenience in making duplicate parts a set of stops is furnished. The in and out traverse is 10 inches and the cross traverse 11 inches. The height under the frame is nine inches. The cutting bar is provided with a relief tool apron and the maximum distance under the apron is 15 inches. If desired a turret tool holder and ram slide that can swivel to a maximum of 10 degrees on either side of the vertical position can be furnished.



Newton Special Slotting Machine.

Marketed by the Newton Machine Tool Works, Inc., 24th and Vine streets, Philadelphia, Penn. Write for prices and illustrated literature.

Diamond Saw Company's Model 1A.

NEW SHALER VULCANIZER.

The outstanding characteristics of the new Shaler vulcanizer, model L-40, shown in our illustration, are simplicity, economy and safety. It meets the requirements of the large tire shop for supplementary apparatus for mending a few tubes when a larger outfit is not in operation, and of the small garage which requires an inexpensive yet thoroughly reliable tube plate.

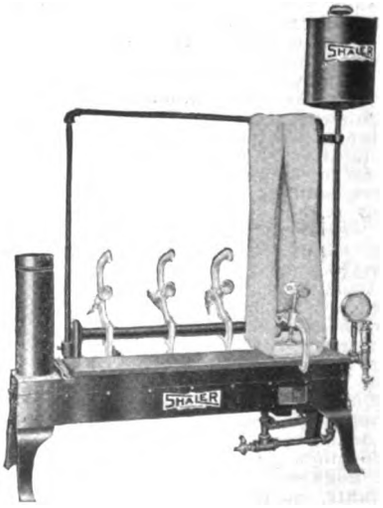
The machined vulcanizing surface, which stands nine inches above the base, adapting this model to either floor or bench use, is 4¾ by 24 inches. Four movable clamps are provided and are always ready for use and easily operated. Automatic temperature control, long a feature of Shaler vulcanizers, is provided in the form of a thermostatically operated damper to regulate the intensity of the heat of the gas or gasoline flame. A safety valve and a steam gauge are supplied with the outfit.

Marketed by the C. A. Shaler Company, Waupun, Wis., and sold at retail for $25. Write for trade discounts.

TWO STOW PORTABLE TOOLS.

Of the large line of Stow portable tools for garage work we show two different devices in our illustrations. One is the two-speed, two-spindle drill, which the maker claims to be the only tool of its kind on the market furnished complete with breast plate and screw feed and designed for the exacting customer who demands an accurate drilling speed for his tool. It has capacity of 0 to one inch and by means of the two spindles drills from 1/16 inch to ¾ inch can be used and maximum drilling efficiency secured. The tool is fitted with a heavy duty type of motor, extra heavy bearings and grease encased gears made of specially treated steel. No. 1, or centre spindle, is fitted with Jacobs chucks taking S. S. drills 0 to 2½ inch, speed 450 revolutions per minute. No. 2, or offset spindle, is fitted with Morse taper socket and takes M. T. drills up to one inch regularly, speed 225 revolutions per minute. The tool is especially adapted for small machine shop and garage work, and is furnished for either A. C. or D. C. current. Its weight is 26 pounds.

The second illustration shows the Stow suspended type Gee Whiz machine, or



New Shaler Vulcanizer, Model L-40.

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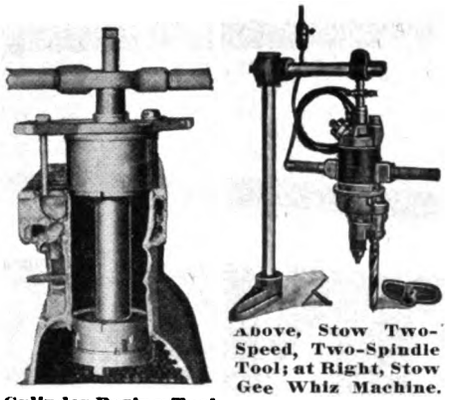


Above, Stow Two-Speed, Two-Spindle Tool; at Right, Stow Gee Whiz Machine.

Cylinder Boring Tool.

general utility tool. It is furnished in all sizes for grinding, drilling, polishing, die sinking or assembling, and has screw driver attachment. It is within easy reach of the the operator's hand for work on floor, rack or bench, and is especially suited for garages and repair shops where combination service is required. It is furnished for any current system.

Marketed by the Stow Manufacturing Company, Binghamton, N. Y. Write for prices and descriptive literature of the complete Stow line of tools.

CYLINDER BORING TOOL.

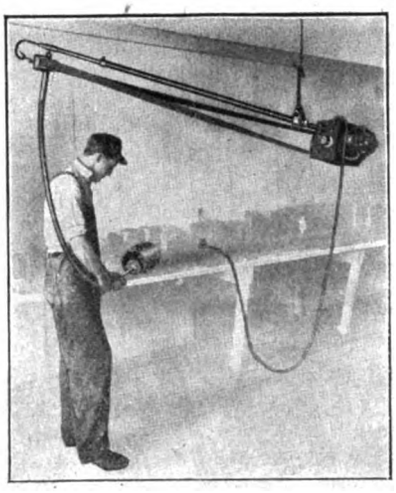
Reboring, recognized as the only practical remedy for scored or distorted cylinders, is strictly job work and the possession of a reboring tool should make the dull season of any shop bring business and added profit. The machine illustrated herewith is clamped to the cylinder and requires only a moment to set it up. It is furnished with left hand thread bar for use on Fords or other small motors of the detachable head type and right hand thread bar for use on other types. It is equipped with accurate, milled cutters which are all adjusted at one operation and may be clamped in any position. It is centred at top and bottom and has lead or guide rings working ahead of the cutters. While it is equipped to operate by hand it may be arranged to be worked by power. It has a range, with attachments, from a bore of 2¾ inches to 5 1/16 inches. One cut is usually sufficient to leave a true and smooth surface and to take out any irregularities in the cylinder walls.

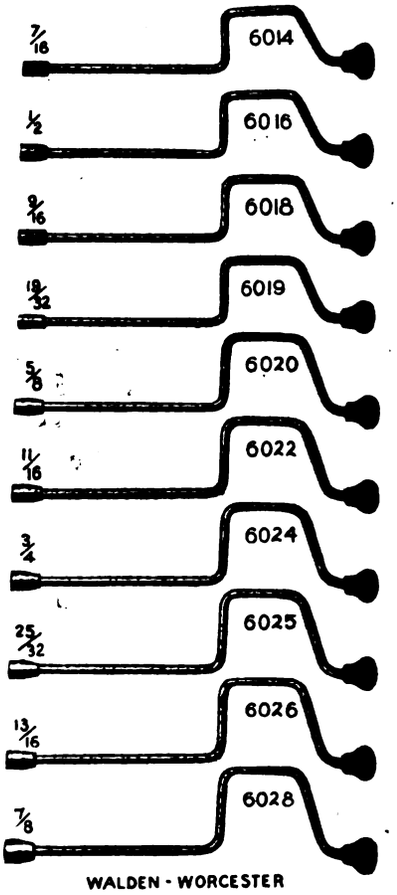
Made by Storm & O'Hair, Thompson, Ia. Price for the improved model, $60.

WALDEN-WORCESTER WRENCHES.

Every repair man appreciates the value and convenience of special tools, and will consequently be interested in the new Walden-Worcester long shank brace socket speed wrenches. These tools are big time savers, especially when used on a series of the same sized nuts as on cylinders, and are considered indispensable in garages where they have been tried out. They can be used in almost any kind of work in connection with assembling and dismantling motor cars, and are very efficient, rugged and generally serviceable. To gain the most time in removing nuts the practise is to first start the nut with an offset socket and then speed it off with the brace or speed wrench. There is a size for every purpose, as is shown in our illustration.

Marketed by the Walden Manufacturing Company, 60 Commercial street, Worcester, Mass. Price of set of 10 wrenches, $6; single wrenches, 65 cents each.





WALDEN - WORCESTER

SPEED WRENCHES

Complete W-W Long Shank Brace Socket Speed Wrench Set.

EMERGENCY AXLE STUB.

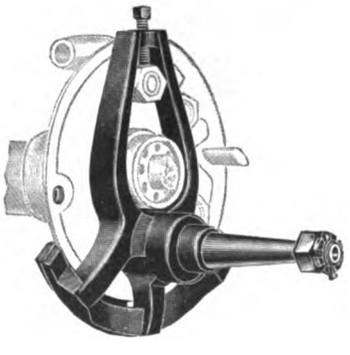
With this device the Ford car in case of broken axle shaft can be put on wheels in a very few minutes and towed into the nearest garage at a good rate of speed with a minimum loss of time. It is so constructed that it merely hooks under the flange on the axle housing and has a set screw on top which when screwed down holds the device firmly in place on the axle housing. The device known as No. 1 is made to take the Ford axle cones and a Ford front wheel is used. The type known as the rear axle device is the same as this except that it has a tapered stub to take the rear wheel. In this case installation is accomplished by removing the broken axle from the wheel hub and putting the wheel on the stub.

Made by the Ekern Bros. Manufacturing Company, Flandreau, S. D. Price, $5.

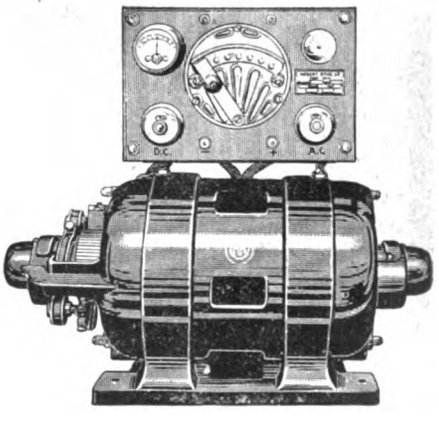
HB BELTED CHARGING OUTFITS.

Battery charging outfits are valuable equipment in every garage, if they are efficient, low in first cost and economical. The maker of HB belted chargers claims these characteristics for his outfits, and points out that they are big money makers for their owners. The HB battery charger will charge six six-volt batteries or their equivalent at one time at an average cost of 10 cents for each battery, leaving a very large profit for the garage man. The capacity of this outfit is 11 amperes—42 volts varied by the number of batteries charging. It is 24 inches high and 27 inches long, and the ammeter, field rheostat, voltage lamp and two controlling switches are all mounted on a clear electrical slate switchboard. The bearings used are S K F make. The set is supplied complete ready to connect with either alternating or high voltage direct current.

Marketed by Hobart Bros. Co., Troy, N. Y. Write for full particulars and prices.



Emergency Axle Stub.



HB Belted Battery Charger.

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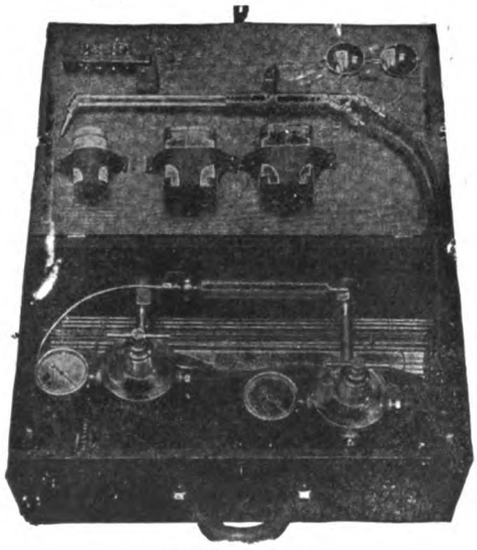
WATER WELDING

BE RIGHT AT THE START

We are the oldest and largest producers of welding outfits in the United States. The WATERHOUSE equipment has always been the leader in this country and was standard even before other outfits were designed.

The WATERHOUSE is the best in design, workmanship, material and finish that scientists have been able to develop. WATERHOUSE exclusive features leave nothing to be desired in welding equipment.

The WATERHOUSE is not a by-product nor a filler-in to keep the shop busy in dull season. Nor is it made just to sell. It is the product of specialists, backed by our reputation, capital and business integrity, and is produced to meet the demand for an outfit that will fill every requirement in any service.



(Outfit Complete.)

It costs no more than other standard equipment, yet measured by its utility, service and economy in operation, it is the cheapest shop equipment that can be bought.

Great profits are made in welding. It is a growing business and affords every opportunity to the small shop man; yet it makes a proposition large enough for the big investor. It is a constant money making

WATERHOUSE

3 PELHAM STREET

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HOUSE OUTFIT

EARN BIG PROFITS QUICK

enterprise in which the investment is comparatively small and the profits large.

With a WATERHOUSE the small job yields many times the usual profits. It turns junk into gold, and its utility is always constant and its value never lessened. In any work that can be done with welding equipment, the WATERHOUSE will do it efficiently and economically.

No other outfit is so safe or so easy to operate. The first cost covers the whole investment and any garage, repair or machine shop, service station, factory or metal plant is not efficiently equipped without a WATERHOUSE.

Send today for our free instruction book. It contains the practical information that every welder should have.

Successful welders will tell you why the WATERHOUSE is the outfit for you to buy and why they use it. Learn the amount of work to be obtained in your town. It will surprise and interest you.

Start today---there is a WATERHOUSE welding equipment all made and ready for you.

For detailed information, prices and trade discounts write immediately.

WELDING COMPANY

BOSTON, MASS.

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Labor and Money Saving Suggestions for the Motor Car Repairman.

CHAIN DRAWER.
(Figure 1.)

What is more exasperating than trying to join the two ends of a tight chain? At times one needs several hands to hold each end, line up the holes and insert the pin at the same time. It is especially awkward when chains are in places not conveniently accessible. A handy little device which may be easily made to do this work is herewith illustrated. From soft steel stock ½ by 1½ inches cut a piece about six inches long. Draw a centre line lengthwise along the wide faces. About one-half inch from one end of this centre line drill a half inch hole. About 1¼ inches up from this bore a one-quarter inch hole from narrow face to narrow face and about 3¾ inches further up bore another one-quarter inch hole in a similar manner, being careful to drill true so the holes will be in the centre of the narrow faces. Now with a hack saw cut along the centre line you have marked. Cut a couple of pieces of one-quarter inch round stock about four inches long. Thread each up to within an inch of one end with some thread for which you can procure wing nuts. Set the unthreaded ends flush in one of the jaws and secure with small pins. The threaded ends put through holes of the other jaws and put washer and wing nut on each. You now have a handy little clamp useful for many purposes. To use this to tighten a chain spread the jaws apart and placing one in each end of the chain, allowing the roller of the latter to seat in the recess of the jaw to prevent slipping. By tightening first the top nut and then the lower one a powerful leverage will be obtained, which will hold the chain in position while same is being securely fastened together. Simply unloosening the wing nuts will allow the clamp to be removed.

CHEWING GUM IN REPAIR WORK.
(Figure 2.)

It not infrequently happens that the amateur repair man is unable to replace a nut on a bolt located in some part of the machine where the designer evidently did not take into consideration the fact that space is required for the fingers or other tools in working on the same. This often results in the loss of one's temper and a waste of much time. Quite often in a place of this kind the nut can be easily put on by sticking it on the end of a stick with a wad of chewing gum and holding it against the bolt, turning it until the thread catches.

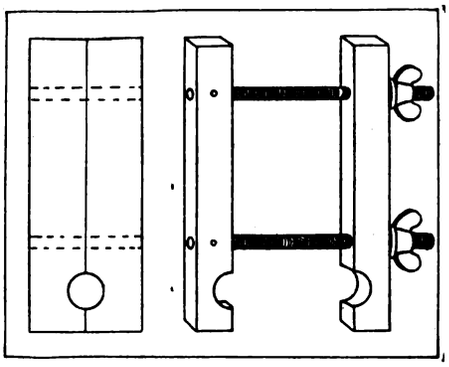

Fig. 1—Device for Drawing Chains.

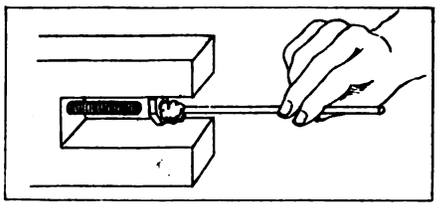

Fig. 2—Chewing Gum in Repair Work.

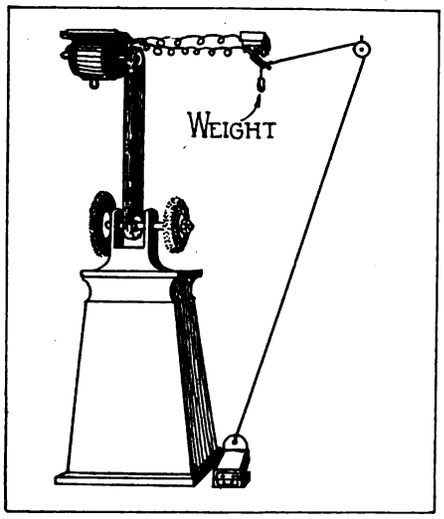

Fig. 3—Foot Operated Switch.

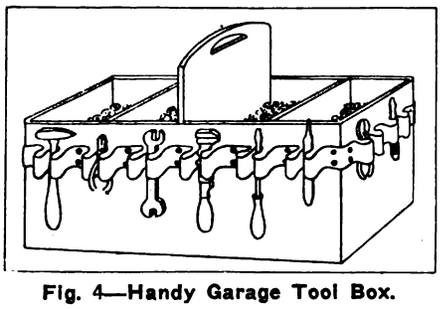

Fig. 4—Handy Garage Tool Box.

FOOT OPERATED SWITCH.
(Figure 3.)

Small electric motors, such as are used for individual buffers, emery wheels or drills, where the current is used frequently, but not for any great length of time usually are not, as a general rule, operated through a rheostat, but by means of a simple throw switch. When the use of these devices is wanted it is almost always at a time when the hands are covered with grease and oil, resulting in the ever present danger of getting an electric shock when throwing the switch. An ingenious mechanic has devised a means of operating the switch by the foot. This device consists of a block of wood forming a food pedal, hinged to another piece secured to the floor. To the electric switch handle is attached a weight suspended by a stout cord, to keep the switch open when pressure is released. The foot pedal is connected to the switch handle by a piece of window curtain cord running over a pulley in such a manner that by pressing down on the pedal the switch is thrown in connection and the apparatus started. When the operation is over the foot pressure is released, which throws the switch, thus shutting off the current without further attention.

HANDY TOOL BOX.
(Figure 4.)

A handy box for keeping together, ready for instant use anywhere, the most often used small tools and an assortment of nuts, bolts, washers and cotter pins may be made from a common box of convenient size, preferably with sides about ¾ inch thick. The most satisfactory one will be found to be of oblong shape. This should be divided into four parts by three partitions, as shown in the illustration, the centre partition having an opening cut in it for a handle.

Along the sides of this box and placed near the outside upper edges screw a long strip of strap metal having sufficient spring in it to hold its shape if temporarily distorted. The kind used on the revolving rubber stamp stands, but a little heavier, will do. Pick out the few small tools you most often use for quick jobs and bend the strip of metal in shape so that each tool may have a place of its own around the box and may be easily removed by a quick jerk when in a hurry.

It is well to keep this little utility box always stocked and ready, having other tools for use at the bench or in the shop.

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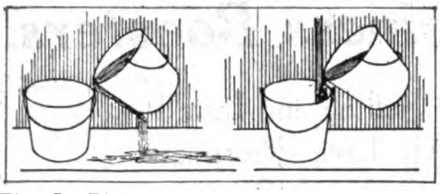

Fig. 5—Right and Wrong Way to Pour Liquids.

POURING LIQUID FROM A PAIL.
(Figure 5.)

Few persons can pour the liquid contents from a pail, or even a tumbler, without spilling some on themselves or the ground. Try this method, which is as old as the proverbial hills, but seems to have been forgotten by many. Hold a rod or wire against the lip of the vessel from which the pouring is done, in such a way that the liquid will flow down the rod without spilling. This is very simple and eminently effective.

SANITARY WASH STANDS.
(Figure 6.)

A wash stand equipped with an ordinary well to hold the waste which passes through a garage drain is generally troublesome and unsanitary, it becoming choked with mud and matter so that the waste will no longer flow out. If a bend, as shown in illustration, is installed the annoyance will be overcome. This will draw off the water from below the surface, preventing the solid matter in suspension from getting into the drain, but causing it to settle at the bottom of the well, from which it can be removed easily. The bend, or elbow, is provided with a cap, D, which allows access to the drain for flushing purposes. As a further convenience a slight depression or valley, A, may be made in the floor just adjacent to the grated cover, C, which sets in the rim cover, B, so that the waste will settle there instead of passing into the well. The sediment can be removed periodically to a place in the open air where it will become aerified.

REPLACING SMALL SCREWS.
(Figure 7.)

An old steel pen has its use in repair work, especially when replacing small screws in speedometers, magnetos, electric horns, etc. These screws are generally too small to be held in the fingers, in which case slip a screw into the slit or hole of the pen, which should be held in a penholder. In this way it is easy to start the screw.

PUTTING FLANGE ON TUBING.
(Figure 8.)

A simple way to make a flange or rolled edge on copper tubing when installing a new gasoline line is as follows: Mark a centre line on a block of hard wood and along the line bore three or four holes of sizes corresponding to the outside diameters of the most common sizes of tubing. Then saw the block longitudinally in two sections through the exact centre of the holes. Place the tube in its proper hole in the two sections and clamp in a vise, allowing the tube to extend ¼ inch above the surface of the block. The flange or roll can be made by driving in a round nose punch of suitable size placed in the top opening, as shown.

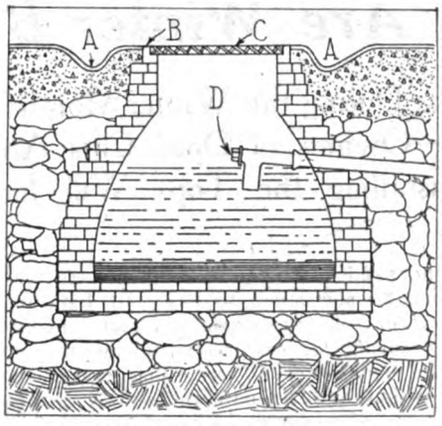

Fig. 6—Sanitary Wash Stands.

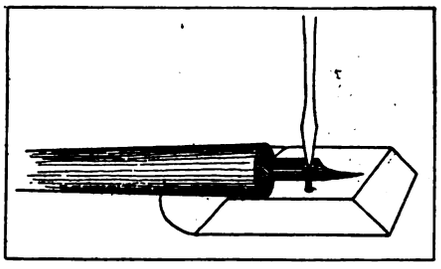

Fig. 7—Replacing Small Screws.

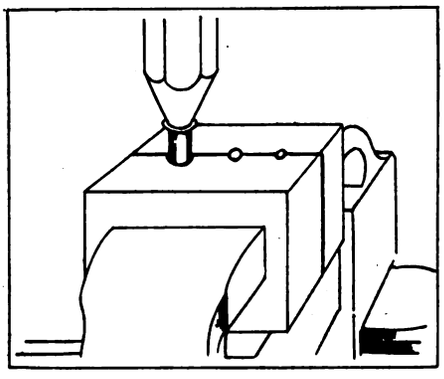

Fig. 8—Flanging a Tube.

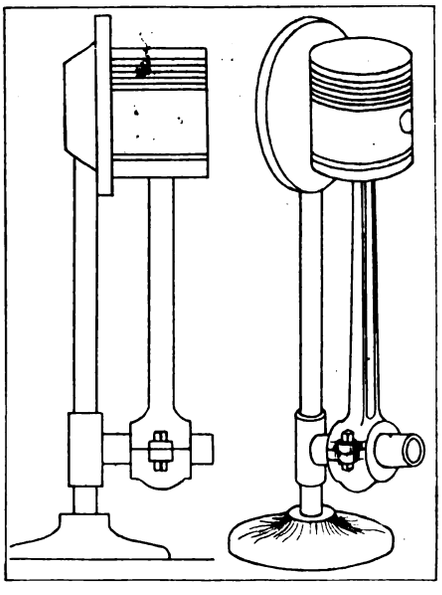

Fig. 9—Aligning Connecting Rods.

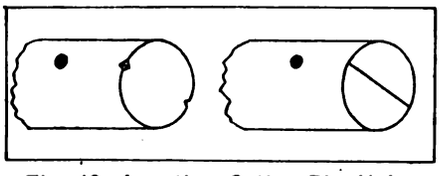

Fig. 10—Locating Cotter Pin Holes.

LOCATING COTTER PIN HOLES.
(Figure 9.)

In removing a nut held by the cotter pin one is invariably so intent in getting the nut off that the location of the cotter pin hole is seldom noticed. In fact, it is doubtful if this is ever thought of by the average layman, until such a time as it is desired to put it back when the nut is again in place. A simple way to make sure of the location of the hole is to mark the end of the shaft by means of two notches cut in the edge with a cold chisel in the same plane as the hole or by a straight line cut on the end with a cold chisel. See sketch. When putting on the nut it can be screwed up tightly until the castellated openings in it line up with the marks on the edge of the bolt, at which time the cotter pin can be easily inserted.

TESTING CONNECTING RODS.
(Figure 10.)

In installing new bearings in the connecting rods it is important to know that these are correctly placed in relation to the rod itself and the side of the piston. A jig for ascertaining this, similar to one used by one of the large motor makers, consists of a substantial stand, A, mounted on a bench or table, mounting a vertical shaft, B. To the upper end of this shaft is securely fixed a smooth and accurate face plate, A. Near the lower end is a short projecting shaft, D, of the exact diameter of the bearing of the crankshaft. Also the axis is exactly at right angles to the surface of the face plate. The distance between the parts C and D corresponds with that between the piston and the connecting rod bearing.

The piston and rod assembly is used complete. The bearing is clamped on the shaft, D, as it would be onto the crankshaft, and so that when rocked back and forth the piston just touches all or partly on the face plate, C. If the contact is perfect, the alignment of the bearings is considered to be correct. If the piston bears on the face plate on only one edge the alignment should be remedied. In some cases this, while not to be generally recommended, may be done by placing the rod in a vise and bending slightly through a long leverage until the alignment by trial becomes satisfactory. Of course the proper way, theoretically, is to have the bearings scraped in.

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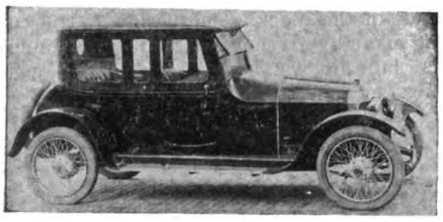
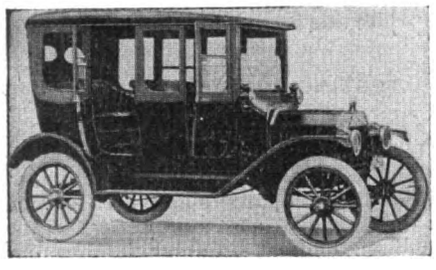
Convertible Tops Are Winter Business Boosters.

Stimulate Your Business During the Winter Months By Selling and Installing Convertible Tops—Owners of Open Cars Are All Live Prospects and the Work of Installing the Tops Will Increase Your Business.



Detachable Limousine Top Company's Scripps-Booth Top.

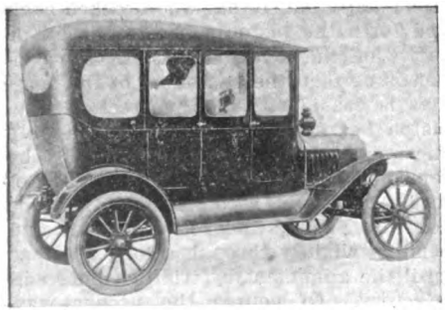
ONE of the greatest handicaps under which dealers have labored for years is the decided lethargy that overtakes the trade during the winter months. This condition has been so universal that the majority of dealers have accepted it as a matter of course and do not struggle against it. Conditions have become so bad that during January and February, according to estimate, the average concern does only about a third of the business transacted during summer months.



Springfield Top-Notch Top on a Ford.

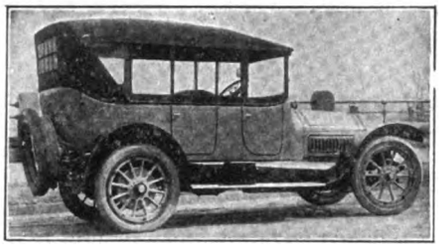
The progressive dealer concentrates on winter specials during the dull season to stimulate his business, a practise which every dealer ought to follow. There are many excellent winter specials that will help to keep all departments fairly busy, and from time to time the Editor will present practical suggestions of that kind. This month's winter special is about "ready-to-wear" enclosed tops.

There is a wide range of tops that can be bought at reasonable prices and look as good as special jobs, and there are thousands of owners of open cars who can be persuaded to buy. By handling winter tops the dealer not only makes the profits on each sale, and possibly on the installing job, but will increase the revenue of his repair and supply departments at the same time. The necessity for repairs and adjustments averages higher in the winter than in the summer.

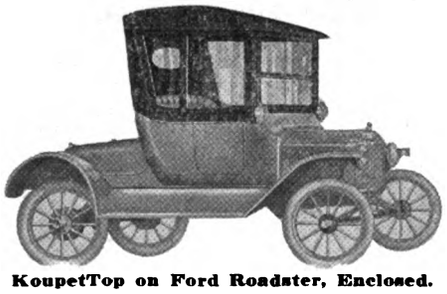


Anchor Glass-Enclosed Sedan Top.

The Detachable Limousine Top Company, Hempstead, N. Y., makes tops for Fords, Buicks and Scripps-Booth bodies. The tops for Fords are made of wood and metal, with clear crystal glass in windows and doors, and a plate glass windshield. The interior lining is light colored and slip covers to match are furnished. The equipment includes a dome light, flower vase and silk curtains for the windows. Tops for the touring car are priced at $135 and for the runabout $110. The top for the Scripps-Booth is for the eight-cylinder, cloverleaf body and is made of three-ply mahogany veneer. The Buick-Nassau top is a one-piece job of agasote and is without a joint. The interior is in keeping with high class coach work, and equipment includes a vanity case, electric cigar lighter, flower vase, umbrella stand and electric dome light.

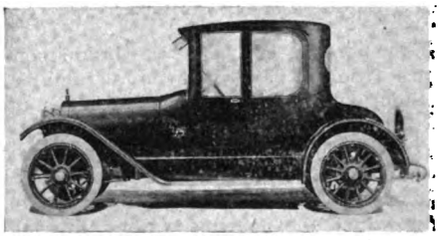


Adams-Williams Top on Cadillac Eight.



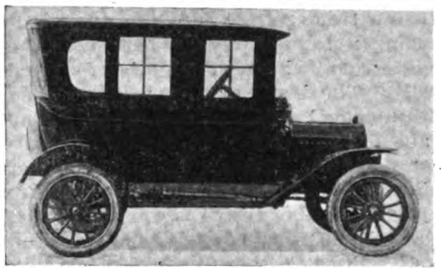
KoupetTop on Ford Roadster, Enclosed.

Tops for Maxwells and Fords are made by the Springfield Commercial Body Company, Springfield, Mass. These are claimed not to rattle and to be absolutely noiseless. Heavy glass is used throughout and the trimmings and fittings give the top the appearance of a "tailored" job. The back of the Maxwell top is made of solid metal. The top for the Maxwell sells at $150 and the Ford at $57.50.



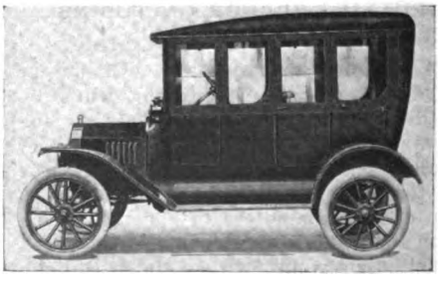
Limousine Top Company's Coupe Top on a Haynes 36-R Chassis.

The Anchor Buggy Company, Cincinnati, O., makes glass enclosed sedan and coupe tops for Fords and for both touring and roadster models on the Oakland 32 chassis. Features of this line are drop ventilating windows, anti-rattle attachments and the general fine appearance of the tops. The Anchor sedan for Ford touring cars sells at $77.50, and the coupe for Ford roadsters for $62.50. Several desirable attachments can be had for small extra charges, such as frosted dome light, ventilating windows, storm curtains, etc. The Anchor glass enclosed top for the Oakland bodies are of pressed steel and wood, with solid deck roof, whipcord lining and electric dome light. The retail price is $125, while that of the top for the Oakland roadster is $110.



Fouts & Hunter Cozy Cab.

A comprehensive line of all-metal tops for practically all makes of cars, including Cadillacs, Dodge Brothers and Fords, is made by the Adams-Williams Manufacturing Company, 1790 Broadway, New



Wadsworth's "All Season" Limousine Top.

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York City. The glass windows and panels are set in steel frames and are proof against shock or rattle. A patented construction prevents weaving. Distinct tops are built for each model of car, and all are very well appearing, it being practically impossible to distinguish them from special jobs. The prices are very reasonable for such high grade product—the top for Ford touring cars retailing at $85 and the runabouts $60. These tops can be converted either for open touring with hood folded back or completely enclosed within three minutes.

The KoupetTop for Ford roadsters, made by the Heinzelman Brothers Company, Belleville, Ill., has five heavy glass panels that slide easily on hangers. The roof is dome shaped and weather proof. The KoupetTop for Ford 1915 roadsters costs $80, while the 1914 model is priced at $82. A light model top for Ford roadster sells for $37.50.

Tops for Chalmers and Haynes cars are made by the Limousine Top Company, Kalamazoo, Mich. These are high grade and conform to the quality of the chassis and body. Curved or bent glass is used where necessary to follow body lines. The interiors are beautifully finished and equipped, and the tops can be used either in winter or summer. The price for the sedan and coupe tops for Haynes touring cars and roadsters is $275. For the five-passenger Chalmers the price is $275 and for the seven-passenger, $300.

The Fouts & Hunter Carriage Company, Terre Haute, Ind., makes for the dealer trade a "De Luxe" line of tops for Ford cars. They are designed for all seasons, being convertible, and are sold at extremely low prices. Full particulars can be obtained from the company.

One of the leading makers of winter tops is the Wadsworth Manufacturing Company, Detroit, Mich., its line being known in the trade as the "A-W" tops. Wadsworth offers tops for all makes of cars, specializing on Fords, which retail for about $55 each, and are very serviceable and add materially to the appearance of the car.

Formation of New Smith Corporation.

Maker of Heavy Parts and Forgings for Motor Cars Has Laid Plans for Huge Expansion.

The plans of the A. O. Smith Company, Milwaukee, Wis., for an expansion of its business have been completed. The preliminary statement was announced in the September issue of the Accessory and Garage Journal. For some time past President A. O. Smith had been working quietly, in conjunction with C. K. Frankhauser of New York City, a financier, who has been connected with several similar developments, to devise plans that would enable him to provide for the tremendous growth of the business. Accordingly, the A. O. Smith Corporation has been formed to take over the old company, the new concern having capitalization aggregating about $13,000,000.

The new capital consists of $3,000,000 seven per cent. preferred cumulative stock and 100,000 common, no par value. Under the new arrangement Mr. Lockhart of White, Weld & Co., New York bankers; I. C. Elston of Elston & Co., Chicago bankers, and Major C. C. Jamieson of Jamieson & Houston of New York, become directors. President Smith remains in control and management of the new company as president.

The old A. O. Smith Company, which specialized in the Smith motor wheel, pressed steel frames and rear axle housings and heavy stampings and drop forgings for motor cars, was organized in 1904 and was the outgrowth of C. J. Smith & Sons Company, founded about 30 years ago by President Smith's father. In 1904 the A. O. Smith company succeeded to the business of the Federal Manufacturing Company, which was an evolution of the original Smith company, starting with a capital of $200,000, which grew to a total of $1,200,000 without the stockholders being assessed even one dollar. Since 1909 the company has been acquiring large tracts of land and putting up new factories as the business expanded.

The growth of the Smith company's business has been remarkable, and it is estimated that earnings for the fiscal year to end July 31, 1917, will total $1,800,000. Net assets will be in excess of 113 per cent. and net quick assets in excess of 45 per cent. of the preferred stock. The stock has a sinking fund of at least 20 per cent. of net earnings after preferred dividends, beginning Oct. 1, 1917, which is to be applied to purchase and cancellation of the stock. No dividends in excess of $6 per share per annum can be paid on the common stock until the amount of the preferred has been reduced to $1,500,000.

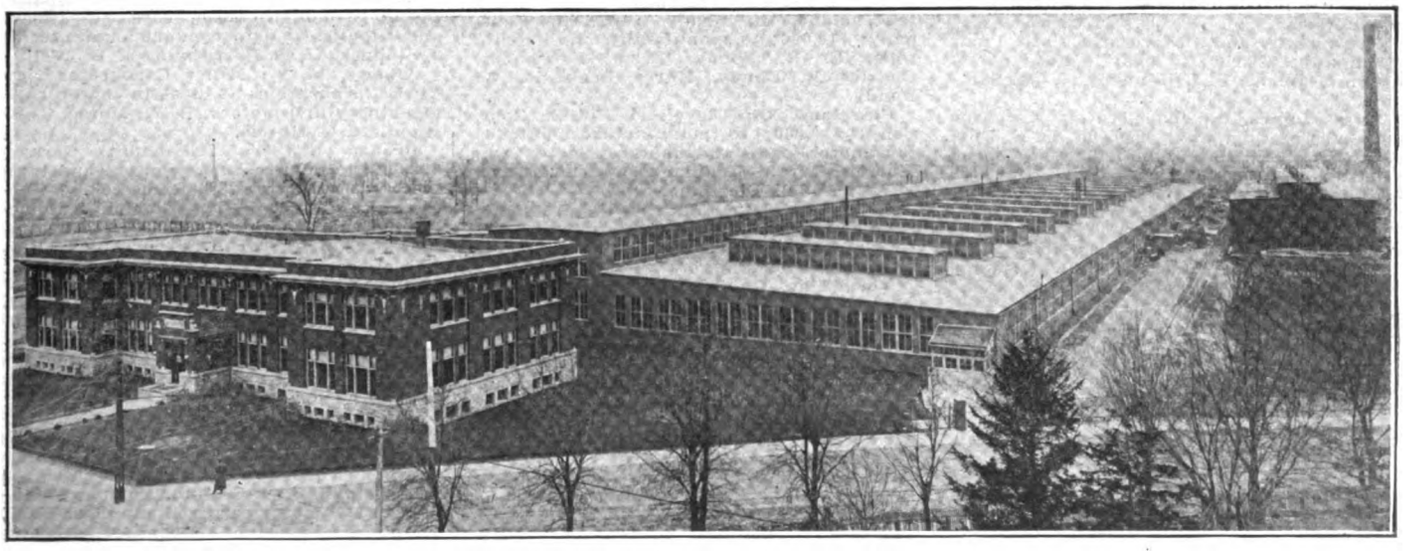
The company announces that it has on hand unfilled orders amounting approximately to $4,500,000, and that it faces the brightest period in its history.

WANTS INFORMATION.

Paul Riviere of the Auto-Metallurgique Company of Brussels, Belgium, who is now at the Manhattan Square hotel in New York City, would be glad to receive any information concerning cars and parts manufactured in this country.

Correspondence should be addressed to Mr. Riviere personally at his hotel, and should be in French if possible. He would like to receive catalogues, prices and conditions of American constructors who wish to sell their cars and have agencies in Europe after the war; catalogues, prices and conditions of constructors of electrical starting, lighting and ignition outfits for orders of about 500 at the time; catalogues, prices and conditions of manufacturers of four, six and eight-cylinder motors; manufacturers of gear boxes, axles, transmissions.

Alvin T. Fuller, the well known Boston dealer in Packard cars, who also has branch distributing agencies throughout New England, was elected a representative in Congress from the Ninth district of Massachusetts.



Plant of A. O. Smith Corporation, Milwaukee, One of the Best Equipped Pressed Steel and Drop Forge Plants in the Country.

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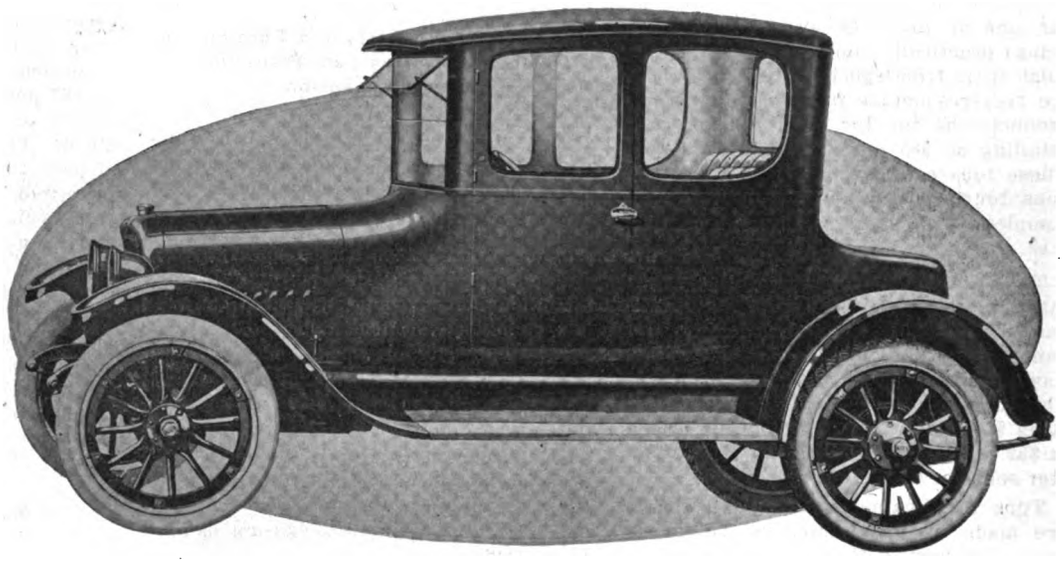
Allen Announces Two Enclosed Car Body Models.

A Convertible Coupe and a Convertible Sedan Are Now Mounted on the Allen 37 Chassis, Manufactured by the Allen Motor Car Company, Fostoria, O. Price of Coupe, $1075; Sedan, $1095. Complete Description in Automobile Journal, Nov. 10, 1916.

Motor, L head, four-cylinder.
Bore and stroke, 3¾x5.
Horsepower (S. A. E.), 37.
Lubrication, splash pressure.
Cooling, thermo-syphon.
Ignition, Westinghouse.
Starting and lighting, Westinghouse.
Carburetor, Stromberg.
Fuel feed, vacuum.
Clutch, cone.
Gearset, three-speed, selective.
Rear axle, full floating.
Wheelbase, 112 inches.
Rear springs, underslung.
Tires, 33 by four inches.



Allen Coupe Body on Four-Cylinder Chassis.

NEW CONCERNS RECENTLY INCORPORATED.

Monthly Record of New Business Houses for which Charters Have Been Issued In the Various States and Classified According To Nature of Business.

Parts and Fittings Makers Incorporated.

Denver, Col.; The Auto-Gray Appliance and Chemical Company; $10,000; C. O. Rice, F. M. Taylor, Jr., F. P. Bertschy.

Wilmington, Del.; Shockley Motor Company; $1,000,000; to manufacture and sell motors, pumps, engines and automobiles.

Chicago, Ill.; Automatic Auto Top Company; $75,000; Francis H. Lerboe, Armand V. H. Smith, John O. Bishco.

Chicago, Ill.; Baker Motor Service Corporation; $10,000; Fred D. Hieronumus, J. M. Arvey, Mark D. Goodman.

Chicago, Ill.; Hope Motor Livery Company; $1500; James P. Marzano, Annie B. Marzano, Joseph A. Marzano.

Johnson City, Ill.; E. D. Hanks Motor Company; $10,000; E. D. Hanks, C. J. Richards, Frank Graham, Frank Threat, W. A. Dickerson.

Newcastle, Ind.; Newcastle Auto Parts Company; $20,000; to deal in auto parts; John E. Burns, P. J. Kennedy, W. M. Sample.

Des Moines, Ia.; The Trotter Kerosene Carburetor Company; $250,000; H. S. Butler, D. F. Witter, John Gilcrest, George Phillips, George Huffman, G. W. Hartley.

Danville, Ky.; Danville Motor Company; $5000; T. F. Durham, D. W. Mahan, J. W. Mitchell.

Paducah, Ky.; Gus Edwards Motor Sales Company; $5000; George W. Katterjohn, A. G. Edwards, Mrs. Maud Katterjohn.

Boston, Mass.; Liberty Motors, Inc.; $25,000; Winthrop M. Jameson, Winthrop S. Jameson, Nana E. Joseph.

Boston, Mass.; McCarthy-Meyer Motor Company; $25,000; John J. McCarthy, Isador Meyer, Clarence Tichell.

Detroit, Mich.; Venus Dry Storage Battery Company; $50,000; William J. Malloy, Muir B. Dyffield, Frederick O'Hearn.

St. Paul, Minn.; The Roberts Motor Company; $50,000; H. L. Roberts, Zachariah Roberts, Minerva Roberts.

Kansas City, Mo.; Hiatt-Buick Motor Company; $2000; O. W. Hiatt, L. S. Simmons, W. S. Hiatt.

Newark, N. J.; Brick Church Auto and Taxi Company; $10,000; to manufacture and deal in motors, engines and machinery; J. A. Knowles, C. N. J. Joseph, G. Browne, Robert K. Shoemaker.

Newark, N. Y.; Chase & Perlman, Inc.; $25,000; to manufacture machinery, motors.

New York, N. Y.; Eastern Motor Parts and Accessories Company, Inc.: $5000; George Saks, Nathan Ladell, Gertrude Wolfe.

New York, N. Y.; Kent Motor Corporation; $100,000; to manufacture motors of all kinds.

Portland, N. Y.; Motor Accessories Corporation; $110,000; to deal in automobile parts, gas, gasoline and machinery.

Canton, O.; Canton Auto Parts Manufacturing Company; $3,000,000; to manufacture motor car parts; S. S. Kurtz, J. M. Kurtz, James J. Lynch, M. A. Yeakley, S. S. Kurtz, Jr., F. M. Murphy.

Cleveland, O.; Bondy Auto Top Company; $10,000; to manufacture automobile tops; E. R. Bondy, Fred L. Tesmer, Charles M. Bondy, Harry Loeb, R. W. Bondy.

Cleveland, O.; Cleveland Clutch Company; $10,000; to manufacture clutches for motor cars and motorcycles; C. A. Morris, Harold T. Clark, C. C. Owens, Ernest Andell, Sterling Newell.

Columbus, O.; Shilling Automobile Bumper Company; $100,000; to manufacture a safety device for motor cars; E. C. Shilling, Jacob Dagger.

Vermillion, O.; Dall Motor Parts Company; $35,000; F. P. Penning.

Youngstown, O.; Charters Motor Sales Company; $10,000; Harvey J. Charters, Jared P. Huxley, James Cutteridge, C. S. Klingensmith, Eva Pearce Charters.

Commerce, Okla.; Sand S. Motor Company; $5000; C. V. Stuart, G. E. Scott, Roy Stuart.

Austin, Tex.; Lamar Motor Company of Paris; $7500; J. E. Osborne, G. H. Hoyes, E. T. Hutson.

Milwaukee, Wis.; The Le Roi Company; $350,000; to manufacture engines, tools and machinery; William C. Quarles, Julian Olds, J. A. Dietrich.

Dealers In Automobiles and Motor Trucks.

St. Louis, Mo.; Demmo St. Louis Sales Company; $5000; to deal in motor cars and accessories; C. Bruce Head, N. Falconer, Jr., J. M. Berry.

Springfield, Mo.; The Queen City Auto and Truck Company; $6000; to carry on a wholesale and retail business in motor cars; Joseph L. Carroll, O. Wyatt, Claude H. La Rue.

Newark, N. J.; Orange Electric Garage; $50,000; to deal in motor cars, motorcycles, wagons; W. Carver, J. A. Savage, Jr., A. E. McGeehan.

Paterson, N. J.; Arnold Motor Car Company; $100,000; general motor car business.

Albany, N. Y.; Larry-Well Company; $5000; to deal in motor cars, accessories and supplies and to conduct a garage; A. J. Volmer, L. F. Bargebuhr, J. B. Well.

Albany, N. Y.; Miller Carburetor New York Corporation; to deal in motor cars, machinery and motors; B. W. Morse, C. W. Rundlett, G. Morris.

Bronx, N. Y.; Fairmount Garage; $22,000; to deal in autos, garage and taximeters; J. E. F. and D. Ramsteck.

New York, N. Y.; The Electric Automobile Sales Corporation; $10,000; to deal in motor vehicles, cars and carriages; J. B. Parcell, F. H. Parcell, G. Tiernan.

New York, N. Y.; J. S. Johnston & Co.; $35,000; to deal in autos and supplies; L. De LaPuente, H. Alstaedter, L. J. Dirand.

Syracuse, N. Y.; C. A. Spear Motor Company, Inc.; $60,000; to deal in automobiles and supplies; J. E. O'Brien, G. W. Bartlett, C. A. Spear.

Cleveland, O.; The Hal Motor Car Company; $1000; Thomas H. Jones, Leslie Nichols, William L. David, W. T. Kinder, Gardner Abbott.

Cleveland, O.; L-G Motor Company; $10,000; to sell motor cars and supplies; David Klein, Marie Rauer, Margaret Appelby, Joseph Schaeffers, Louis H. Wieber.

Columbus, O.; Oakland Pittsburg Com-

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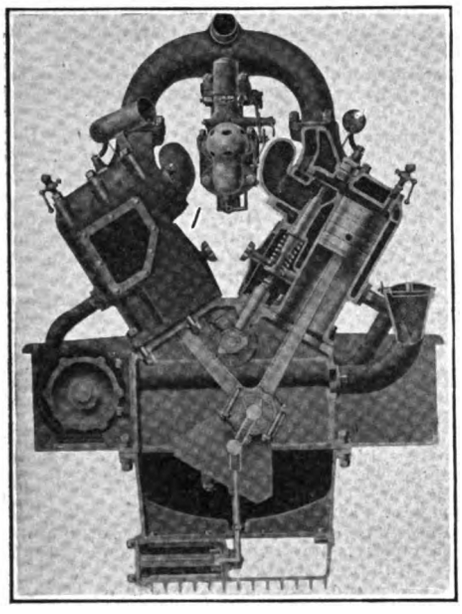
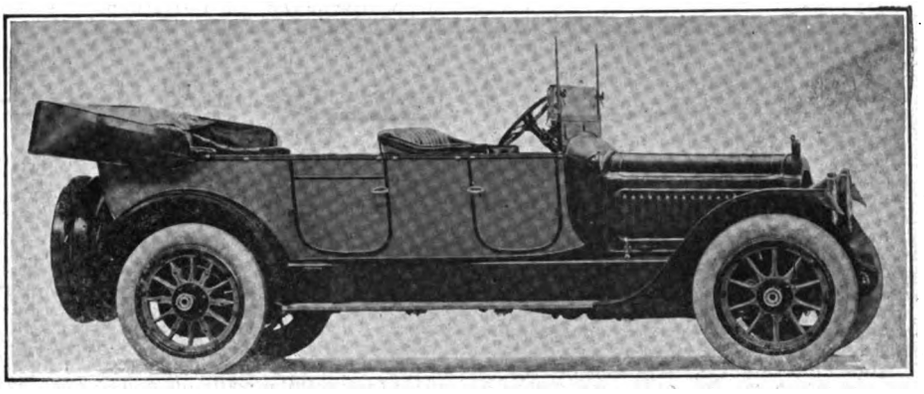
New Packard Twin Six for 1917 is Built Lower.



An Unusual View of the Packard Engine.



The New Packard Is More Compact and Sets Lower.

Two New Twin-Six Models, 2-25 and 2-35, Are Offered for 1917 by the Packard Motor Car Company, Detroit, Mich. Prices of 2-25 Range from $2865 to $4315; the 2-35 from $3295 to $4915. Complete Description in The Automobile Journal, Oct. 25.

Motor, V type, Twin Six.
Bore and stroke, 3x5.
Horsepower (S. A. E.), 43.2.
Piston displacement, 424.1.
Lubrication, pressure.
Cooling, pump.
Ignition, Packard-Delco.
Starting and lighting, Packard-Bijur.
Carburetor, Packard special.
Fuel feed, pressure.
Clutch, Packard dry plate.
Gearset, three-speed, selective.
Rear axle, semi-floating.
Wheelbase, 126½ and 135 inches.

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pany; $40,000; to handle automobiles; W. C. Faunce, Andrew P. Martin, Frank J. Santry, Fred C. Wood, C. E. Sederland.

Philadelphia, Penn.; Hudford Philadelphia Sales Company; to buy, sell and repair automobiles and motor driven vehicles of every kind; Winfield S. Walker.

Chattanooga, Tenn.; Stanley Motor Car Company; $10,000; O. B. Andrews, A. T. Whitesides, C. Patten, Jr., V. B. Whitesides, W. G. Thomas.

Knoxville, Tenn.; Lockwood Auto Company; $5000; Robert Lockwood, Charles B. Lockwood, William O'Halloran, G. C. Lockwood, Thomas J. Davis.

Memphis, Tenn.; Allen Motor Car Company; $5000; L. S. Caro, Jesse Edgington, H. J. Homes, R. M. Bennett, B. D. Edgington.

Jacksonville, Fla.; Strickland & Kuchler Motor Company; $15,000; to make, buy, sell and care for motor vehicles; J. E. Kuchler, J. S. Strickland.

Indianapolis, Ind.; Barkley-Wonser Saxon Company; $25,000; to deal in autos; M. R. Barkley, Frederick Wonser, W. W. Buchanan.

Paoli, Ind.; Graves-Brown Auto Company; $15,000; John T. J. Graves, Charles T. Brown, Earl Brown, Cecil C. Johnson, John W. Polson.

Thibodaux, La.; Pelican Auto Company; $10,000; president, Richard J. Barker; vice president, Frank L. Barker; secretary, Sidney A. Bourg.

Bucksport, Me.; Bucksport Motor Company, Inc.; $5000; to deal in automobiles and motorcycles and cycle parts; president, R. Randall; clerk, Emily M. Randall; treasurer, Edward W. Cook; Alice E. Cook.

Boston, Mass.; Jack Stone Auto Company; $5000; L. H. Resulk, Moses Resulk, John Resulk, John Stone, Samuel Resulk, W. J. Lessard.

Pittsfield, Mass.; The Berkshire Motor Sales Company, Inc.; $5000; to handle the Saxon automobiles; treasurer, Sheldon Herrick; John S. Whistler, A. M. Whistler.

Detroit, Mich.; Dewey-Bergeron Motor Company; $25,000; to deal in motor cars; Frederick C. Dewey, Arthur Bergeron, Phelps Newberry.

Kansas City, Mo.; Kansas City Detroiter Automobile Company; $5000; J. A. Ramsey, C. M. Doss, F. H. Wilmont.

Kansas City, Mo.; Liberty Motor Company; $10,000; to handle the Liberty; Herbert G. Shimp, Charles A. Richter, C. V. Curtis.

St. Louis, Mo.; Broadway Motor Company; $5000; to act as agents for automobile manufacturers and the makers of automobile parts and accessories; A. Brockmann.

St. Louis, Mo.; Carondelet Motor Car Company; $5000; Frank E. Stevens, R. P. Edginton, J. W. Pruett.

Nashville, Tenn.; Southern Motor Truck Company; $5000; J. H. McEwen, A. T. Levine, J. M. Currey, A. C. Taylor, N. O. Donnell.

Tazewell, Tenn.; J. S. Whiteaker Auto Company; $3000; J. S. Whiteaker, J. C. Buis, S. H. Douglass, K. M. Whiteaker, A. W. Whiteaker.

Dallas, Tex.; Flippen Auto Company; $2000; Newton G. Flippen, R. T. Harris, J. W. Youngblood,

Tacoma, Wash.; American Automobile Company; $10,000; W. W. King, W. H. Pratt.

Accessories, Equipment and Supplies.

Chicago, Ill.; Accessories Manufacturing Company; $10,000; Fillmore W. Todd, Carl L. Otembra, Albert Duce.

Indianapolis, Ind.; Permalite Corporation; $100,000; to deal in motor accessories; E. C. Bacon, E. B. McNabb, H. L. Allen.

Boston, Mass.; J. H. & G. L. Atwood, Inc.; $50,000; to deal in automobile tires; J. Harold Atwood, George L. Atwood, J. Clifford Atwood.

Detroit, Mich.; New Era Spring and Specialty Company; $50,000; William S. Daniels, Ethel P. Fulmer, William B Blood.

Omaha, Neb.; Runyan Cushion Wheel Company; $100,000; A. L. Runyan, F. C. Burling, Hermann O. Wolff, D. R. Sewards, E. J. Conrad, John E. Van Dorn.

Albany, N. Y.; Colonial Tire and Rubber Company; $20,000; to deal in rubber goods; L. H. Henry, A. F. White, J. A. Crockett.

Brooklyn, N. Y.; Apex Tire and Rubber Company; $100,000; to manufacture rubber tires and tubes; Levi Heims, W. J. Pollock, J. A. McCarthey.

Manhattan, N. Y.; Ideal Anti-Skid Company, Inc.; $125,000; patented devices preventing skidding of autos; H. N. Baruch, S. Baruch.

New York, N. Y.; Automobile Securities Corporation; $100,000; to deal in motor car accessories; C. R. Allison, P. Lacroix, W. L. Glover.

New York, N. Y.; Achilles Rubber and Tire Company; $1,000,000; to manufacture and deal in rubber tires.

New York, N. Y.; Dayton Tire Sales Company, Inc.; $10,000; to deal in rubber tires, tubes and motor car accessories; B. C. Elliott, J. A. Pontolillio, E. R. Detable.

New York, N. Y.; Tire Company of Philadelphia, Inc.; $6000; general rubber tire manufacturing business; Sydney Bernheim, Catherine A. Weldon, Harry H. Jacobson.

Watertown, N. Y.; No-Glar-On Company, Inc.; $100,000; to manufacture the No-Glar-On electric light bulb for automobile headlights. Frank M. Williams, Adda B. Williams, Charles G. Willis.

Akron, O.; The Akron Cycle and Supply Company; $10,000; Joseph J. Bertels, Robert Raymund, Alice Raymund, A. L. Bertels, Guy McMillin.

Cincinnati, O.; The Economy Tire Company; $10,000; William J. McCauley, Frank H. Cross, Julius H. Davis, H. M. White, R. E. Simmonds, Jr.

Cincinnati, O.; U-Need-S Starter Company; $3000; to manufacture and deal in accessories; Frank Hartung, Charles Weigel, Edward N. Hempelman, William Hector, George F. Eyrich, Jr.

Cleveland, O.; Denoon Sales Company; $5000; to sell motor car accessories; I. N. Denoon, F. S. Jones, N. D. Sample, W. J. Streibinger, L. M. Knoll.

Cleveland, O.; Ohio Tire Fabric Company; $10,000; to manufacture tire fabrics; John J. Davis, Joseph J. Kroupa, M. M. Boczeck, H. M. Bliss, J. A. Elden, Frank J. Cibulka.

Cleveland, O.; Tire Rebuilding Company; $10,000; C. S. Stork, J. A. Parsons, M. V. Parsons, Charles Reeder, John J. Metzger.

Toledo, O.; Studebaker Sales Company; $500,000; R. M. Schrod, E. C. Spader, Louis A. Luckmeir, Vernon H. Burke, N. H. Fich.

Oklahoma City, Okla.; O. K. Auto Supply House; $10,000; Neil Dillingham, H. O. Reed, S. W. Dillingham.

Philadelphia, Penn.; Columbia Motor Supply Company; $5000; A. J. Zaytoun, treasurer.

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Unclassified Incorporations Recently Made.

Dover, Del.; Knights of the Motor World; to promote the welfare of persons engaged in the motor car business; R. I. Erlichman, A. L. Seltzer, C. P. Brewster, Michael Shapiro, T. G. McGohan, A. J. Erlichman.

Chicago, Ill.; The Auto Dealers' Association, Inc.; $2500; C. J. MacFadden, R. S. Tuthill, Jr., F. P. Page.

Worcester, Mass.; Demare Allen Company; $10,000; George Demare, Walter H. Allen.

Buffalo, N. Y.; Taylor & Knauth, Inc.; $20,000; Charles E. Taylor, Daniel Kobler, Raymond Knauth.

New York, N. Y.; The Automobile Salon, Inc.; $25,000; to exhibit, demonstrate and promote the sale of motor car advertising; G. Alouzl, A. Engel, H. A. Holm.

New York, N. Y.; Keegan, Aprahamian & Co., Inc.; $10,000; Frank W. Kegan, Atranik Aprahamian, Timothy F. McGuire.

New York, N. Y.; S. & S. Commercial Auto Renting Company, Inc.; $1000; Julius Schwarzwald, Nettie Schwarzwald, Joseph M. Levine.

Syracuse, N. Y.; H. Barcroft White Corporation; $5000; H. Barcroft White, Hans J. Dickman, Marjorie Meldram.

Akron, O.; Amazon Tire and Rubber Company is constructing a four-story building. L. F. Smith is president of the company; L. J. Schott, secretary, and C. E. Bettler, treasurer.

Akron, O.; C. E. Mills Taxicab and Transfer Company; $2500; Charles E. Mills.

Bucyrus, O; Ohio Happy Farmer Tractor Company; $20,000; to distribute farm tractors; H. H. Lehman, L. A. Shaeffer, E. Eich, R. D. Demmer, F. W. Wiedmayer.

Cincinnati, O.; Cincinnati Auto Specialty Company; $10,000; Albert W. Connor, Lee Harburger, B. L. Schurman, S. M. Harburger, T. A. Ryall, W. A. Moore.

Dayton, O.; The Bart Motor Sales Company; $10,000; 25 N. Jefferson street.

Milwaukee, Wis.; Milwaukee Auto Livery Company; $2500; John W. Mau, Faun R. Norris, Ernst R. Jeske.

Seattle, Wash.; The Automobile Dry Clean and Specialties Company; $30,000; H. W. Harbaugh, H. T. Harbaugh, A. W. Kline, O. F. Kline, S. F. Woody.

Newly Organized Manufacturers of Cars.

Dover, Del.; A. C. Axle Manufacturing Company; $1,000,000; to manufacture motor vehicles; H. W. Savage, A. P. Fish, A. C. Bennett.

Dover, Del; C. A. C. Products; $3,000,000; to manufacture and deal in motor cars and vehicles; G. S. P. Kleeberg, Sidney S. Kirm, David Kassell.

Dover, Del.; The Temple Motors Corporation; $5,000,000; to engage in the manufacture and sale of motor vehicles of all kinds; Herbert E. Latter, Norman P. Coffin, Clement M. Engnor, G. T. Maxwell.

Chicago, Ill.; Dictator Motor Car Corporation; $1,000,000; to manufacture, sell and deal in and with motor cars; George R. Guthrie, John H. Comergys, Ernest W. Spicer.

Jackson, Mich.; L. C. Auto Company; $25,000; to manufacture and deal in motor cars; Fred Clarke, Arthur W. Loete, H. V. Weed.

Newark, N. J.; F. S. Motor and Garage Company; $5000; to manufacture, sell and deal in motor cars and to conduct a garage; F. Seery, H. Lasher, Florence Newman.

Buffalo, N. Y.; Harvey Top and Body Company; $20,000; to manufacture motor cars, tops, bodies; L. G. Smith, Henry C. Harvey, H. B. Harrison.

Manhattan, N. Y.; Randall Motors Corporation; $50,000; to manufacture automobiles and supplies; J. A. Lane, C. P. Kramer, R. E. Maben.

Philadelphia, Penn; Sweeten Wilmington Company; $25,000; to manufacture, sell and repair motor cars; H. E. Latter, N. P. Coffin, C. M. Egner.

Garages and Repair Shops Newly Chartered.

Birmingham, Ala.; Capitol Park Garage Company; $3000; G. W. Burbage, W. C. Kennedy, A. H. McCauley.

Maywood, Ill.; Plummer's Garage and Auto Livery; $2500; Walter Plummer, Jr., John K. Sullivan.

Kansas City, Mo.; Delaware Company; $2400; to operate a public garage and deal in motor cars and accessories; H. R. Larrieu, E. C. Ruth, E. E. Bradshaw.

Kansas City, Mo.; The King Motors Company; $50,000; will equip a garage and machine shop; Douglas Andrews, H. P. Berham, A. H. Robinson.

Kansas City, Mo.; The Trails Garage Company; $2000; W. F. Lyons, A. H. Lyons, Thomas Toohy.

Omaha, Neb.; Yellow Cab and Garage Company; $10,000; to engage in motor car livery and repairing; Frank Williams, J. H. Sutley.

New York, N. Y.; The Groton Auto Company, Inc.; $15,000; garage and repair shop; W. F. DeWitt, G. C. Begent, F. A. Begent.

New York, N. Y.; Paige-Detroit Service, Inc.; $1500; to conduct an automobile service station; Adrian D. Waring, John O. Hofbauer, Samuel R. Bell.

Cleveland, O.; The Woodhill Garage Company; $5000; Francis Beyerle, C. J. Buckley, L. A. Kujawski, W. R. Winn, W. M. Bell.

Columbus, O.; Nessle Street Garage Company; $5000; A. H. Miller.

Fond du Lac, Wis.; Johnson Motor Company; $20,000; to operate a garage, repair shop, agency and accessory business; F. A. Johnson, Arnold Knop, T. H. Whalon.

Madison, Wis.; The International Garage Company; $3000; H. J. Lear, E. C. Lindsay, B. W. Lindsay, R. S. Young, S. E. Young, J. R. Sedgwick.

Rice Lake, Wis.; The Rice Lake Motor Car Company; $15,000; to operate a garage and to deal in new and used cars and to repair work; Gustave Paradise, R. A. Beaudette, W. N. Scott.

NEW BUSINESS CONCERNS AND CHANGES OF NAMES.

The Month's Record of Transfer of Ownerships and Opening of Garages, Agencies, Branches, Service Stations and Repair Shops.

New Business Locations and Removals.

Birmingham, Ala.; T. S. Smith & Sons of 824 Brown-Marx building has moved to 1015 First National Bank building.

Fresno, Cal.; E. W. Johnson Company has moved to 6325 California street, San Francisco. The company was formerly located at 122 North Van Ness avenue.

Los Angeles, Cal.; The Ford Motor Company has moved to Seventh street and Santa Fe avenue. The company was formerly located at Olive and 12th streets.

Los Angeles, Cal.; E. W. Kingsley, 1040 West 29th place, has moved to 1929 Burlington street.

Los Angeles, Cal.; Manual Arts Garage is now located at 4267 South Vermont street. They were formerly located at 4627 South Vermont street.

San Francisco, Cal.; The Logan-Cadwalader Company, Velie and Dort distributor, has secured the Goodyear tire building on Van Ness avenue and Sutter street.

San Francisco, Cal.; Triple Tread Manufacturing Company, 545 Van Ness avenue, is now located at 141 Grove street.

Atlanta, Ga; J. I. Case Threshing Machine Company, has moved to Nashville, Tenn. The company was formerly located at 567 Whitehall street.

Chicago, Ill.; Central Auto Service, 139 North Clark street, has moved to 1452 North Clark street.

Chicago, Ill.; Diamond Rubber Company has moved to 1925 Michigan avenue, from 1523 Michigan avenue.

Rock Island, Ill.; William H. Bolles, 2406 8th avenue, has moved to 2335 Wilkes avenue, Davenport, Ia.

Indianapolis, Ind.; Fountain Square Auto Company, 1025 Shelby street, has moved to 1112 Prospect street.

Mason City, Ia.; The Wagner Motor Company, Ford distributor, is located in a new garage at Delaware and Second streets.

Oskaloosa, Ia.; The Hawk Automobile Company has moved into the building at 402 First avenue. The company will install a garage and repair shop.

Sioux City, Ia.; Thomas Murphy, 1510 West Sixth street, is now located at Homer, Neb.

Goff, Kan.; Clifford Jerome has bought a garage.

Louisville, Ky.; Firestone Tire and Rubber Company has moved to Box 597. The company was formerly located at 928 South Third street.

Louisville, Ky.; Moll Brothers has moved to 117 South 22nd street. They were formerly located at 1504-05 W. Main street.

Louisville, Ky.; Standard Auto Company, 212-14 E. Broadway, is now located at 728-730 S. Fourth street.

New Orleans, La.; Firestone Tire and Rubber Company, formerly located at 615 Baronne street, is now at 1740 South Charles street.

Fall River, Mass.; Belcher & Hopkins, Bayis avenue, has moved to Pottersville, Mass.

Lawrence, Mass.; The Wills Motor Car Company has moved into its new garage at Jackson street extension and Swan street.

Melrose Highlands, Mass.; Franklin Garage Company has moved to General Delivery, Cambridge, Mass.

Springfield, Mass.; Auto Parts and Repair Company, 306-10 North Main street, has moved to 101 Liberty street.

Baltimore, Md.; Mt. Vernon Motor Company, 1118 Cathedral street, is now located at 605-7 W. North avenue, rear.

Detroit, Mich.; The National Auto Sales Company, Ford agent, has opened a new home at 969 Jefferson avenue.

Detroit, Mich.; Vacuum Oil Company is now located at 815 Free Press building. The company was formerly located at 812 Ford building.

Grand Rapids, Mich.; Adams & Hart, 47 North Division street, has moved to 415 Pleasant street.

Saginaw, Mich.; National Garage System Company has moved to 290 Alger street, Detroit, Mich.

Kansas City, Mo.; Joseph W. Reid, 1028

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Westover street, has moved to 5757 Warnell street.

Kansas City, Mo.; Charles L. Young, 4145 Agnes avenue, has moved to the Times building, New York City.

Auburn, Neb.; A. R. Avery has bought the Workman & Rozean Garage.

Omaha, Neb.; The Standard Motor Car Company has moved into its new location at 2020-23 Farnam street.

Camden, N. J.; Modern Machine Company, 406 Main street, has moved to Philadelphia, Penn.

Albany, N. Y.; Kupki's Garage, corner Lancaster and Dove streets, is now located at New Salem, N. Y.

Batavia, N. Y.; Studebaker-Overland Garage has moved to 696 South Salina street, Syracuse, N. Y.

Binghamton, N. Y.; Binghamton Ford Sales Company has moved from 25 Henry street to 235 Water street.

Schenectady, N. Y.; Schenectady Vulcanizing Works, 170 Lafayette street, is now located at 26 B'wine avenue.

Syracuse, N. Y.; Auto Equipment Company, 821 Butternut street, has moved to 833 University block.

Cincinnati, O.; Walter Dickton, 1246 Herschel street, has moved to 3020 W. McWicken avenue.

Cincinnati, O.; The General Auto and Repair Company is now located at 908 Race street. They were formerly located at 3433 Reading road.

Cleveland, O.; Standard Electrique Car Company, 2045 Euclid avenue, has moved to Jackson, Mich.

Columbus, O.; The Capital City Motor Company has moved into newer and larger quarters at 32 South Fourth street. The concern handles the Reo and Pierce-Arrow.

Columbus, O.; Cott-McKelvey Auto Company, 446-448 North High street, has moved to 169 North Fourth street.

Toledo, O.; The H. L. Yaryan Motor Company will move into larger quarters at 917 Jefferson avenue. The company handles Westcott cars in northern Ohio.

Youngstown, O.; Auto Service Company, Burke street and Belmont avenue, has moved to 618 Poland avenue.

Philadelphia, Penn.; Penrose Fleisher is now located at 1512 Chestnut street. They were formerly located at 1811 Brandywine street.

Big Springs, Tex.; A. G. Hall Saddlery, Auto Tire and Top Company, is now located in the Sparenberg building.

Rutland, Vt.; The Rutland Machine and Automobile Company has removed from 55 Wales street to 107 West street. The company will have more space for its increasing business.

Seattle, Wash.; Land & Evans, 2201 Second avenue, has moved to 1831 Avenue N.

Spokane, Wash.; F. W. Schoenberger, 402 Helena street, has moved to 728 N. Perry street.

Spokane, Wash; F. A. Williams, local Ford agent, will move into the Metropolitan Garage at west 1318 Second avenue, which garage is being remodeled.

Recent Transfers of Business Ownerships.

DeQueen, Ark.; C. N. Payne has purchased the interest of Earl Carter in the DeQueen Garage Company.

Canton, Ill.; Fred Ellis has purchased a half interest in the garage and sales agency of L. R. Snider. The plant will be enlarged and some improvements made. The firm will be distributors for the Dodge, Saxon and Hudson.

Allerton, Ia.; Millard Mace has sold his garage to Hays Brothers, who will do all kinds of repair work.

Davenport, Ia.; John and Leo Kelly have purchased the River to River Garage on Main street, near the Rock Island depot.

Dayton, Ia.; The Freeburn Auto Company has sold a half interest in the business to Verne Rex of Des Moines.

Dow City, Ia.; John Scott has sold his repair shop and garage to Pearl Vore.

Marengo, Ia.; Ray Simmons has bought the Bishop & Willenbrock Garage.

Stanhope, Ia.; Stark Brothers have sold their garage business to A. F. Swanson.

Abilene, Kan.; P. C. Redman has purchased the Lanhely blacksmith shop, which he will convert into a display room for new Maxwell cars.

Argonia, Kan.; I. E. Poer has purchased the North Star Garage.

Burdett, Kan.; Early Haymond has purchased the Reed Garage.

Burlingame, Kan.; N. L. Seaman has purchased the Gus Olson building, Santa Fe avenue. Mr. Seaman will buy Olson & Brown's garage business.

Council Grove, Kan.; Leonard Jasper and James Edwards have bought the Ford accessory stock of Ben Beshears, Ford dealer.

Downs, Kan.; Louis Abrahams and J. A. Beagles have formed a partnership under the name of Abrahams & Beagles and have rented the old Craney building, south of Ebnother's.

Easton, Kan.; Frank and Henry Timpe have taken over the Overland agency for the entire county and will make their headquarters in Leavenworth, Kan.

Hutchinson, Kan.; Loyal S. Tinder has gone into partnership with Lee Larabee.

Lincoln, Kan.; T. A. Rhudy has bought the Windsor Garage.

Luray, Kan.; Ralph Gray has bought the garage of Fred Lindner.

Sedan, Kan.; N. B. Wall has opened a branch garage at Caney, Kan.

Wichita, Kan.; O. A. Hund has sold his interest in the Motor Sales Company to W. F. Wright and N. F. Gorges.

Lansing, Mich.; William Walters has purchased a half interest in the firm of Walters & Son, tire repairers.

Petoskey, Mich.; The Carey Auto Company has purchased the property adjoining its garage and will erect an addition, 61 by 170 feet, for car storage.

Blooming Prairie, Minn.; Roy E. Welch has bought into the Kaatrud repair shop.

Mankato, Minn.; H. P. Perrin has bought the Thomas Conners Garage.

Medford, Minn.; Boynton & Gilman have bought the Sander Garage.

Charleston, Mo; The Cresler & Fassett Automobile Company is now the Cresler-Bend Company. The interest of H. A. Fassett was purchased by Harry Bond.

Richmond, Mo.; John R. Clark & Co., has purchased the T. B. Blount Garage on Cameron avenue and has opened for business.

Dillon, Mont.; The Ditty-Sheppard Auto Company has taken over the Orr Garage and repair shop.

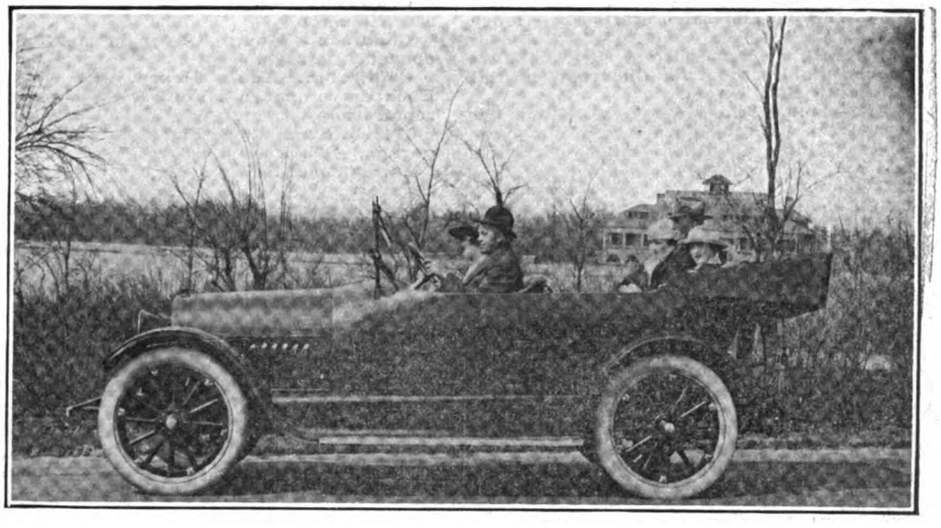
Dutton, Mont.; E. A. Howe has taken over the H. B. Smith Garage and will do repairs.

Ethan, N. D.; Deimer Alfson has bought W. P. Smith's automobile and garage business.

Hartshorne, Okla.; Williams Brothers have bought the Vaughn Motor Company.

Snyder, Okla.; Model Garage will be known as the Roark & Watson Motor Company.

The Sun Light Six Model



The Five-Passenger Sun Light Six Touring Car, Manufactured by the Sun Motor Car Company, Elkhart, Ind, and Priced at $1095. Complete Description in Automobile Journal, Nov. 10, 1916.

Motor, L head, en bloc.
Bore and stroke, 3x5.
Horsepower (S. A. E.), 21.6.
Lubrication, splash pressure.
Cooling, thermo-syphon.
Ignition, Remy.
Carburetor, Rayfield.
Fuel feed, vacuum.
Starting and lighting, Remy.
Clutch, dry disc.
Gearset, three-speed, selective.
Rear axle, full floating.
Wheelbase, 116 inches.
Tires, 34 by four.

Agencies, Dealers and Service Stations.

Meriden, Conn.; The Sorensen Auto Company is now open for business. The show rooms serve as a new home for the Reo car. It is located at 43 East Main street.

Atlanta, Ga.; The Elcar Motor Sales Company has opened offices at 1502 Candler building. They will handle the agency for the Elcar.

Newman, Ga.; The B. H. Kirkby Hardware Company has taken agency for the Acme Red Letter tires.

Clarinda, Ia.; U. G. Damewood and Frank Bales have established a new automobile livery, with headquarters in the Elite Cleaner rooms. They will conduct both day and night service.

Des Moines, Ia; The Means Auto Company has leased the Guarantee motor building at 408-12 Twelfth street and has taken possession.

Dubuque, Ia.; L. J. Clay has entered the automobile tire business and has opened a store on Ninth street, between Main and Locust streets.

Davidson, Mich.; The Grove Auto Company has opened a branch in Flint, Mich., at 132 W. First street. The company is the general distributor for Genesee county.

Monroe, Mich.; The Monroe Garage Company will have an Overland service station.

St. Louis, Mo.; W. L. Patterson has taken the agency for the Miller carburetor. Sales rooms at 5233 Cabanne avenue.

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80x120; $12,000.

Brooklyn, N. Y.; James McGowan, 1201 Flatbush avenue; one-story garage, 35x50; $2000.

Brooklyn, N. Y.; E. M. Adelshon, 1776 Pitkin avenue; one-story garage, 75x46; $3000.

Brooklyn, N. Y.; H. G. Filbert; one-story garage, 25x70; $4000.

Brooklyn, N. Y.; Samuel Koenig, 687 St. John's place; one-story public garage, 37x100; $10,000.

Brooklyn, N. Y.; I. Kuperstog, 217 Snediker avenue; one-story public garage, 50x70; $5000.

Brooklyn, N. Y.; Gluck Brothers, 38 Meyer street; two-story garage, 49x97; $6000.

Brooklyn, N. Y.; William Nuolay; one-story garage, 50x150; $5000.

Brooklyn, N. Y.; Charles Infauger & Son, 2634 Atlantic avenue; one-story garage, 125x105; $25,000.

Brooklyn, N. Y.; John J. Gutherman, 21 Chester street; one-story garage, 25x50; $5000.

Brooklyn, N. Y.; Alonzo E. De Baum, 41 Liberty street, New York City; two-story public garage, 100x157; $20,000.

Brooklyn, N. Y.; Midwood Associated, 936 Flatbush avenue; two-story garage, 17x22; $3000.

Brooklyn, N. Y.; Marie Rose; one-story garage, 45x100; $8000.

Brooklyn, N. Y.; Anton Berberich, 551 DeKalb avenue; one-story garage, 39x100; $5000.

Brooklyn, N. Y.; Arthur Ackerman; 3½-story garage, 50x100; $30,000.

Brooklyn, N. Y.; G. Carvas, 130 42nd street; one-story garage, 25x90; $5000.

Brooklyn, N. Y.; J. J. Spinelli, 233 Broadway, New York City; two-story public garage, 75x100; $15,000.

Brooklyn, N. Y.; William J. Hettrick, 10 Stockholm street; one-story garage, 50x100; $6000.

Brooklyn, N. Y.; Mary Schnider; one-story garage, 25x46; $3000.

Brooklyn, N. Y.; Intercity Building Company, 31 East 16th street; one-story garage, 100x100; $10,000.

Brooklyn, N. Y.; Charne Katz, 392 Bushwick avenue; one-story public garage, 50x121x125; $6000.

Brooklyn, N. Y.; Eugene J. Macey, 311 Union street; one-story garage, 20x100; $4000.

Brooklyn, N. Y.; Colony Garage Company, Inc.; L. Erhlich, president, 8714 21st avenue; one-story garage and repair shop, 20x80; $3000.

Brooklyn, N. Y.; M. Schaffner, 847 Park place; one-story garage, 40x89; $7000.

Brooklyn, N. Y.; J. Bushman, 1204 St. Marks avenue; one-story garage, 25x54; $5000.

Buffalo, N. Y.; John Gibbs, D. S. Morgan building; one-story automobile sales room, 23x77x15; $40,000.

Buffalo, N. Y.; William Kennedy; two-story automobile sales room, 46x80.

Buffalo, N. Y.; Frederick C. Miller, 287 East avenue; one-story garage, 18x18.

Cairo, N. Y.; Amos Post, Catskill, N. Y.; three-story public garage, 62x100.

Forestburg, N. Y.; J. Flynn; one and two-story garage, 50x100; $5000.

Jamaica, L. I., N. Y.; John Pavpe, 62 South street; one-story garage, 54x76; $5000.

Jamaica, L. I., N. Y.; A. I. Namm & Son, 452 Fulton street, Brooklyn, N. Y.; one-story garage, 100x100; $15,000.

Jamestown, N. Y.; J. L. Frick, 317 Washington street; two-story public garage, 50x100; $15,000.

Johnson City, N. Y.; Endicott & Johnson; one-story garage, 55x62; $15,000.

Mt. Vernon, N. Y.; Charles A. Tier, 211 Primrose avenue; two-story public garage, 50x70; $9000.

New York, N. Y.; Richard and Mary T. Ahearn, 663 W. 178th street; one-story garage, 25x162; $15,000.

New York, N. Y.; M. J. Harrison, 63 Park row; four-story garage, 68x102; $70,000.

New York, N. Y.; Adam C. Wicke, 406 E. 102nd street; one-story garage, 25x100; $10,000.

New York, N. Y.; Edward P. Poerschke, 32 Union square; one-story garage, 114x90; $14,000.

New York, N. Y.; Cora Garvin, 337 Cauldwell avenue; two-story garage, 45x130; $26,000.

New York, N. Y.; H. Skidmore & Son, 9 East 44th street; one-story garage, 24x66; $5000.

New York, N. Y.; Emma C. Dresser, 2240 Grand Concourse; two-story garage, 50x135; $30,000.

New York, N. Y.; Charles Weihe, City Island, N. Y.; six-story garage, 150x100; $50,000.

New York, N. Y.; Patrick Goodman, 263 E. 133rd street; one-story garage, 75x100; $15,000.

New York, N. Y.; Robert Ferguson, 528 Jackson avenue; two-story garage, 25x140.

Ogdensburg, N. Y.; W. T. Powell; one-story garage, 50x120; $9000.

Plandome, L. I., N. Y.; F. H. Filley; two-story private garage, 20x22; $25,000.

Troy, N. Y.; Hartwell Sales Company, 339 River street; one-story automobile sales room, 50x84; $8000.

Utica, N. Y.; Consolidated Water Company, rear 110 Washington street; one-story garage, 25x79; $4000.

Woodhaven, L. I., N. Y.; Frank Koller, 453 Ridgewood avenue; two-story garage, 20x65; $3000.

Yonkers, N. Y.; Richard Kuriger, 125 Crescent place; one-story garage, 30x60; $4000.

Yonkers, N. Y.; Michael Sarubbi; one-story public garage, 23x98; $8000.

Ellendale, N. D.; George J. Hoffman & Co., Rochester, Minn.; one and two-story garage, 70x100; $25,000.

Cincinnati, O.; L. B. Marx; one-story private garage, 14x22; $2500.

Cleveland, O.; A. Lanese, 2144 Murray Hill road; one-story garage, 66x73; $5000.

Columbus, O.; Fisher Auto Sales Company, 138 E. Gay street; two-story garage and sales room, 43x180; $20,000.

Middletown, O.; American Rolling Mills Company; one-story garage, 15x50; $50,000.

Bartlesville, Okla.; J. L. Overlels; one-story garage, 100x140; $15,000.

Collinsville, Okla.; McEntire & Murphy, Ramona, Okla.; one-story brick garage at 10th and Main street; $8000.

Cordell, Okla.; Cordell-Ford Company; one-story brick garage, 75x140.

Tulsa, Okla.; J. H. Thomas, 12 West Ninth street; two-story garage and sales room, 76x140.

Bethlehem, Penn.; H. A. Conahau, 521 East Third street; two-story garage, 60x116; $12,000.

Bethlehem, Penn.; Forrest Barthold, 24 N. Main street; one-story garage, 39x57; $4000.

Fort Washington, Penn.; G. R. Wallace; one-story garage, 20x50; $2000.

Harrisburg, Penn.; J. L. Shearr; one-story garage, 60x100.

Morrisville, Penn.; T. B. Stockman, 104 S. Pennsylvania avenue; one-story garage, 50x100; $5000.

New Castle, Penn.; Lawrence Auto Company, 36 South Mercer avenue; three or four-story commercial garage and repair shop, 80x160.

Philadelphia, Penn.; Church Lane Garage Company; one and two-story garage and machine shop, 76x110; $8000.

Philadelphia, Penn.; H. C. Hockstader, 1329 Arch street; two-story garage, 40x60; $4000.

Philadelphia, Penn.; H. H. Kline, 536 Mifflin street; two-story garage and repair shop, 45x75; $5000.

Scranton, Penn.; John S. Duckworth, Coal Exchange building; three-story garage, 80x140; $50,000.

Tyrone, Penn.; G. L. Hutchinson, Warriors Mark, Penn.; one-story garage; $5000.

Tyrone, Penn.; Smith Brothers, 10th and Berlin streets; three-story garage, 56x107; $12,000.

Wilkes-Barre, Penn.; E. E. Frederick; two-story garage, 24x30; $3000.

Woodlawn, Penn.; Anton Benulas; three-story garage, 25x100; $15,000.

Nashville, Tenn.; Blackwood Auto Company will occupy building to be erected at 910 Broadway, 160x37; one-story; electric elevator.

Antigo, Wis.; William Hack, Kewanne, Wis.; one-story garage, 50x120; $10,000.

La Crosse, Wis.; B. J. Taylor, 367 N. Prior avenue, St. Paul, Minn.; one-story garage, 44x80; $5000.

Milwaukee, Wis.; Reitman-Straus Company, Railway Exchange building; one-story garage, 50x150; $20,000.

Milwaukee, Wis.; Gillman Estate, 424 Jefferson street; one-story garage, 70x120; $10,000; lessee, Auto Mart, 11th street and Grand avenue.

Milwaukee, Wis.; George Zogel, M. & M. Bank building; one-story garage, 55x150; $10,000.

Oshkosh, Wis.; City of Oshkosh, Daniel Witzel, clerk, City hall; one-story garage, 40x115; $8000.

Waterloo, Wis.; Waterloo Auto Supply Company; one-story garage, 49.6x39.3; $4000.

Warsau, Wis.; Overland-Wausau Company; three-story garage and service station, 66x120; $35,000.

Westfield, Wis. Quinn & Co.; one-story garage and sales room, 40x90; $6000.

New Contracts Recently Awarded.

Arkansas City, Ark.; J. P. Hughs, concrete automobile building, 30x150; for McNeely Motor Company, Inc.; $10,000; organized by T. B. McNeely, president; W. J. Massey, vice president; F. M. Rogers, secretary; will install garage equipment. Agent for Ford cars and dealers in automobile supplies.

Ansonia, Conn.; William Morgan; one-story public garage, 40x125; $7000.

Hartford, Conn.; James O'Laughlin, 756 Main street; one-story garage, 52x200; for Dr. O'Laughlin, Rockville, Conn.; $18,000.

Peoria, Ill.; William Allen & Son, Woolner building; one and two-story garage, 120x170; for L. Robinson, 119 Flora avenue. Lessee, Crown Auto Company, Montier Brothers managers.

Louisville, Ky.; Hilatt Brothers, 401 Inter-Southern building; three-story public garage and automobile sales room, 75x154; for Overland automobile agency, J. H. Limbird, 4th and York streets.

Brookline, Mass.; J. J. Powers, 33 Myrtle avenue, Cambridge, Mass.; one-story garage, 14x23; for John T. Manning, 43 Winter street.

Milton, Mass.; Leighton & Mitchell Co., 95 Milk street, Boston; one-story garage, 35x60; for Walter Baker & Co., Pierce square.

Salem, Mass.; Edmond Leclere, 75 Leach street; one-story public garage, 54x29x76; for John H. Smalle, 432 Essex street; $6000.

Waltham, Mass.; William A. Hewett, 89 Cherry street; one-story private garage, 24x35; for Kelby P. Smith, 108 Summer street.

South Orange, N. J.; Henry Becker & Sons, 356 Prospect street; two-story private garage and chauffeur's quarters, 24x50, for William T. Trimpi, 457 Center street; $7000.

Brooklyn, N. Y.; Murray & Maurceri, 1081 Flushing avenue; one-story garage, 50x72; for Josephine Gulette, 237 Jefferson street; $4500.

Buffalo, N. Y.; Dwiolithic Company; three-story automobile sales building, 51x121; for J. A. Cramer, 739 Main street.

New York, N. Y.; Frank Seery, 30 East 42nd street; one-story garage, 75x99; for James McLaughlin Company, 28 West 144th street.

Columbus, O.; Leo Rinsinger, 710 S. Fifth street; one-story garage, 40x47; for Dr. E. J. Martin, 275 South Sixth street; $3500.

Philadelphia, Penn.; Samuel J. Rea & Son; two-story brick garage, 16x20; for north side Mt. Vernon street, east of 15th street; for Albert Moore, $1600.

Philadelphia, Penn.; Charles E. Fletcher; one-story brick garage, 17x30; south side Yocum street, west of 67th street; $715.

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AGENCIES RECENTLY APPOINTED.

Add to and Correct Your Mailing List—Symbol * Indicates Commercial Vehicle, † Electric, and ‡ Agricultural Tractors.

CALIFORNIA.

Los Banos—Oldsmobile, D. O. Hulen.
Los Angeles—King, The Seeley Auto Sales Co.
Roamer, The Motors Distributing Co.
†Detroit, The Detroit Electric Car Co.
Oakland—King, The Seeley Auto Sales Co.
San Francisco—Saxon, The DuBroy Motor Co.
‡Ford Tractor, Youdall, Koll & Youngholm.

COLORADO.

Boulder—Cadillac, Tom Hussie.
Colorado Springs—*Little Giant, J. R. Young.
Denver—Elgin, The National Motor Co., 1616 Broadway.
Stutz, The Chandler Motor Co., 1518 Broadway.
Ft. Collins—Oldsmobile, G. R. Hopper.
Monte Vista—Oldsmobile, French & Keller.
Trinidad—Dort, The Central Hupmobile Garage.
Hupmobile, The Central Hupmobile Garage.

CONNECTICUT.

New Milford—Oldsmobile, Arcade Machine Works.
South Norwalk—Oldsmobile, S. L. Benedict, 82 N. Main street.
Stamford—Oldsmobile, O. H. Bank, Main street.
Winsted—Oldsmobile, Roscoe Benjamin.

DELAWARE.

Delmar—Oldsmobile, A. Brewington.
Dover—Oldsmobile, F. L. Hardesty.
Wilmington—Monroe, Arthur Johnson, French City Garage.

DISTRICT OF COLUMBIA.

Washington—Madison, National Auto College.

FLORIDA.

Lake City—Oldsmobile, R. H. Shackelford.
Ocala—Oldsmobile, Carmichael Automobile Co.

GEORGIA.

Atlanta—Dort, J. J. Harvard.
Decatur—Ford, The Friggles-Norris Co.

IDAHO.

Challis—Oldsmobile, Red Cross Garage.

ILLINOIS.

Arenzville—Oldsmobile, E. N. Long.
Decatur—Argo, The Henton-Roberts Sales Co., 252 East Main St.
Enger, The Henton-Roberts Sales Co. 252 East Main St.
Chicago—Madison, T. J. Rochford.
Madison, The Combs Co.
Chicago Heights—Madison, A. Kasdorf.
Freeport—Madison, H. Olendorf.
Gillespie—Oldsmobile, Gillespie Garage.
Litchfield—Chevrolet, C. P. Brandon.
Morrison—Madison, W. B. Lewis.
Mt. Pulaski—Buick, The Mt. Pulaski Co.
Studebaker, The Mt. Pulaski Co.
Olivet—Oldsmobile, Richard, Hester & Livingston.
Peoria—Oldsmobile, Fred J. Poshard.

INDIANA.

Danville—Madison, A. G. Prentice.
Decatur—‡Happy Farmer, M. S. Hilpert.
Frankport—Madison, O. B. Smith.
Gary—Madison, C. B. Geiger.
Grass Creek—Madison, Arthur Robbins.
Greenfield—Madison, J. W. Orr.
Indianapolis—Madison, Fred P. O'Brien Motor Co.
Madison, E. L. Baker.
Roamer, E. H. Wilson.
Logansport—Madison, Moore & Barrett.
Medaryville—Oldsmobile, C. W. Hall & Co.
Muncie—Oldsmobile, C. L. Shafer, 201 W. Howard St.
Oakville—Madison, Teeter & Peckinpaugh.
Raised Crossing—Madison, O. E. Gordon.
South Bend—Madison, Frank Weber.
South Whitley—Madison, O. E. Gordon.
Tocsin—Madison, H. S. Garton.

IOWA.

Adel—Oldsmobile, Adel Auto Co.
Avoca—Oldsmobile, Avoca Auto and Supply Co.
Carson—Oldsmobile, Snider Oldsmobile Co.
Council Bluffs—Empire, Standard Motor Car Co., 2020 Farnum St.
Ford, Hughes-Irons Motor Co., 12 South Main St.
Des Moines—Hollier, The Matthews Auto and Tire Co.
Madison, Means Automobile Co.
Iowa Falls—*Koehler, A. B. Reeves.
Pochahontas—Ford, The Posakony-Shimon Co.
Waterloo—Chalmers, J. M. Crosby.
West Branch—Overland, Emory-Thomas, Barrington building.

KANSAS.

Cherryvale—Oldsmobile, Central Auto Co.
Columbus—Oldsmobile, G. H. Ingemells, 212 E. Maple St.
Effingham—Chevrolet, J. N. Arthur.
Emporia—Oldsmobile, J. E. Simpson.
Fort Scott—Oldsmobile, L. C. Lakin.
Fredonia—Oldsmobile, Fees & Buengai.
Girard—Oldsmobile, L. P. Ryan.
Leavenworth—Chevrolet, The Specialty Garage Mfg. Co.
Hays—Oldsmobile, John O'Loughlin.
Herkimer—Oldsmobile, K. & K. Motor Co.
Iola—Oldsmobile, B. T. Barber.
Norton—Oldsmobile, L. P. Ryan.
Olathe—Oldsmobile, G. L. Adams.
Ottawa—Oldsmobile, John Nelson.
Pleasanton—Oldsmobile, Stoffle Hardware Co.
Salina—‡Simplex, Tractor Sales Co.
Wathena—Oldsmobile, Wathena Motor Co.
Wheeler—Oldsmobile, The Lockard.

LOUISIANA.

Hammond—King, Strader Brothers.
Opelousas—King, Leon S. Hass.

MAINE.

Fryburg—Oldsmobile, Pendexter & Weston.
Portland—Smith Form-A-Truck, D. E. McCann.

MARYLAND.

Baltimore—Kline, Pitcher & Harrison, 140 West Mount Royal avenue.
Madison, Ellason Brothers Motor Co.
Salisbury—Oldsmobile, L. W. Winbow & Co.

MASSACHUSETTS.

Boston—Abbott-Detroit, The McCarthy-Meyer Motor Co.
Bell, The Easten Sales Co.
Case, The Easten Sales Co.
Davis, F. H. Grow, Mgr., Langham Motor Co.
H. A. L., G. S. Bishop.
Lozier, The McCarthy-Meyer Motor Co.
Ross "8", The McCarthy-Meyer Motor Co.
*Wilson, M. F. Collins Co.
Brockton—Oldsmobile, Arthur L. Turne.
Oldsmobile, George N. Tougas, 185 N. Main St.
Brookline—Overland, L. A. Vanchon.
Groveland—Oldsmobile, McDonald & George.
Haverhill—Maxwell, J. Raymond Lane.
Inter-State, J. Raymond Lane.
Lawrence—Oldsmobile, A. J. Wells.
Lowell—Jordan, The Dan O'Dea Motor Car Co.
Pittsfield—Saxon, The Berkshire Motor Sales Co., Inc.

MICHIGAN.

Alpena—Chalmers, T. Nensewitz.
Battle Creek—Oldsmobile, Battle Creek Taxicab Co.
Bay City—Oldsmobile, D. K. Kerlie, 708 Water St.
Calumet—Jordan, Calumet Garage Co.
Liberty, Calumet Garage Co.
Detroit—*Redden, The Edward Wilson.
Flint—Packard, The C. H. Lintz Co.
Oldsmobile, Paterson Auto Sales Co., 119 E. Third St.
Grand Rapids—Oldsmobile, E. H. Kerstetter.
*Acme, T. F. Conley.
Ironwood—Oldsmobile, Graham & Pecard.

MINNESOTA.

Chaska—Elcar, John T. Roufs.
Clayton—Studebaker, The Murray Auto Co.
Tracy—Oldsmobile, Thomas A. Nelson.

MISSOURI.

Bolivar—Ford, Dr. O. G. Teegarden.
Joplin—Oldsmobile, Newton & Oliver Motor Co., East Seventh street.
Kansas City—Monroe, Hathaway Motor Co.
Oldsmobile, Hathaway Motor Co.
Lathrop—Dodge, Bright Walker.
Maryville—Oldsmobile, Wadley Brothers, 309 N. Market St.
St. Louis—Metz, Elbeler Motor Car Co.
‡Ford, Ford Tractor Sales Co.

NEW YORK.

Buffalo—Hollier, The Roppenberg Co., 913 Main St.
Madison, The Derrick Gannon Motor Sales Co.
Premier, The Derrick Gannon Motor Sales Co.
Pullman, The Roppenberg Co., 913 Main St.
Elmira—*Koehler, D. G. Waters Brothers.
Glen Cove—Oldsmobile, Seaman Motor Car Co., Inc.
Jamaica—Oldsmobile, Franklin Garage, 9 Franklin St.
Malone—Oldsmobile, Eldridge & Mason.
Medina—Oldsmobile, Luke Smith.
Parry—Oldsmobile, C. F. Eaton.
Rome—Oldsmobile, R. E. Orendorf.
Washingtonville—Oldsmobile, Nicolls Garage.

OHIO.

Barberton—Madison, Warren J. Stimson.
Bucyrus—‡Ohio, Margraff & Linn.
Cincinnati—Madison, Cords & Rund.
Columbus—Case, John Hoffman.
East Liverpool—Oldsmobile, Traveler's Garage and Sales Co.
Kent—Oldsmobile, Fessenden & Hutson.
Kenton—Oldsmobile, W. R. Spittle.
Loraine—King, F. O. Anderson.
Madison, Wiegand Motor Sales Co.
Mansfield—‡Ohio, Shrocks & Taylor.
Minerva—Oldsmobile, M. E. Myers.
Sandusky—‡Ohio, Geo. W. Zester.
Shreve—‡Ohio, Carl Brothers Co.
Sidney—Dodge, The Eshelman Sales Agency.
Tiffen—Oldsmobile, E. S. Yeager.
Toledo—Regal, The Banting Machine Co.
Warren—Oldsmobile, Miller & Troxel.

PENNSYLVANIA.

Clarion—King, J. Sloan McComb.
Falls—*Koehler, A. B. Reeves.
Gettysburg—Oldsmobile, Center Square Garage, York St.
Harrisburg—Oldsmobile, Oldsmobile Co., 120 Market St.
Haselton—*Koehler, A. H. Hamilton.
Mount Carmel—Oldsmobile, Black Diamond Auto Co.
Philadelphia—Jordan, McCurdy Brainard Co.
Pittsburg—Jordan, Robert McCurdy.
Madison, Madison Motor Sales Co.
Pottsville—*Koehler, Swalm Hardware Co.
Scranton—Oldsmobile, A. R. Gould & Sons.
*Koehler, P. J. Needham.
Shamokin—Oldsmobile, A. H. Kershner, Market St.
Sunbury—Oldsmobile, A. W. Pontius, 25 South Second St.

WASHINGTON.

Auburn—Chalmers, E. M. Lang.
Maxwell, E. M. Lang.
Oakland, E. M. Lang.
Chelan—Maxwell, The Lake Transfer Co.
Reo, The Lake Transfer Co.
Seattle—Ford, W. A. Wallace, E. Pike St.
H. A. L. "12", Mitchell Motor Service Co.
*Vim, Barnes & Berdler.
Spokane—Allen, Siler Auto Co.
KisselKar, Seven-Seven Co.
Tacoma—Paige, Lon Schabel.
Walla Walla—National, Foster-Larson Son Co.
Paige, Foster-Larson Son Co.
*Garford, Foster-Larson Son Co.
*Stewart, Foster-Larson Son Co.

WISCONSIN.

Milwaukee—Empire, Pathfinder Sales Co., 163 11th St.
Madison, Racine Auto Tire Sales Co.
Moon, The Yahi Motor Sales Co., 616-620 Wells St.
Peerless "8", John G. Wollager Co., 417-421 Wells St.

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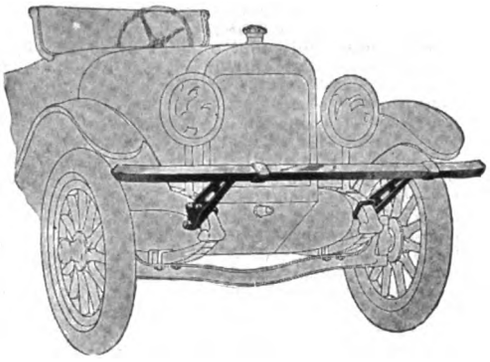
NEW BADGER BUMPER.

This bumper is designed especially for the latest model streamline cars, the bar being carried at a height that offers full protection to the lamps and fenders, as well as the entire front of the car. The substantial fittings or arms conform to the lines of the car, and embody the latest ideas in bumper construction. The illustration shows a design entirely new and individual, called the Protext. Being universal in application, it will fit all standard cars. It may be had fitted with any of the following list of Badger bars: Channel, spring, diamond or round. Of the diamond and round styles there are various sizes to choose from. Finished in either nickel, brass or black.

Made by the Auto Parts Manufacturing Company, 319 Milwaukee street, Milwaukee, Wis. Prices from $5.50 to $11, according to size, shape or finish.



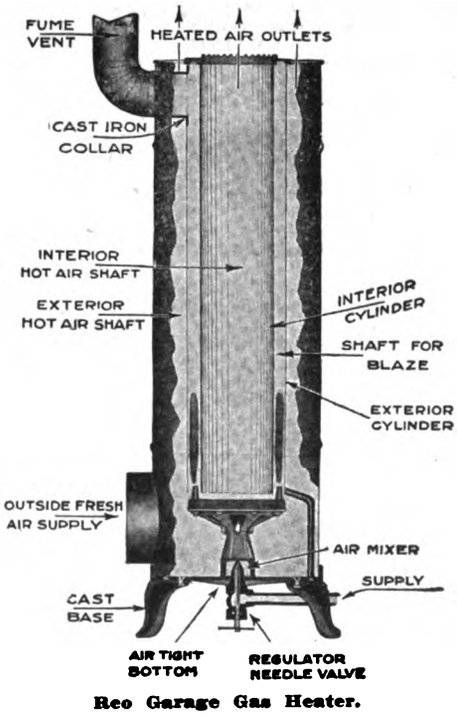
New Badger Bumper.

LEGAL-BRITE HEADLIGHT FRONTS.

This device is installed on the headlights to diffuse the light for city driving and yet give the full benefit of the lights for country driving. It consists of a circular piece of sheet steel to fit over the headlight glass, in the centre of which is a circular opening of generous dimensions. Arranged to fit into this opening is a prismatic glass disc, which is held securely in place by a spring lock wire. It gives a bright illumination in all directions, not only showing the path directly in front of you, but also illuminating at either side and at the same time making it easy for oncoming drivers to see what clearance to allow in passing. When driving in the country the prismatic glass is removed by releasing the spring lock wire, which is easily done with one's fingers. This gives the light its full power.

Made by the Vesta Accumulator Company, 21st street and Indiana avenue, Chicago, Ill. Price, $3.00 per pair.

Legal-Brite Headlight Fronts.



Reo Garage Gas Heater.

REO GARAGE GAS HEATER.

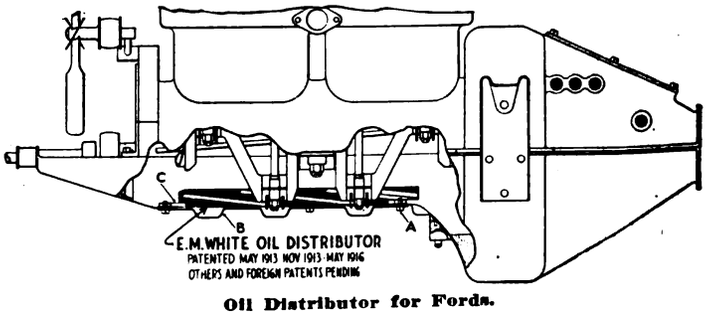
This heater may be run by natural or artificial gas. It consists of an outer cylinder in the base of which is the burner. Inside of the outer cylinder are two concentric cylinders placed over the burner and sealed so that the flame and fumes are contained in the space between them and which space is connected directly to the outer air. Fresh air enters the outer cylinder and passes around the concentric cylinders and inside the inner one, whence it circulates about the garage and heats the same. In this way there is no contact with the flame of the burner or any gasoline fumes that might be there. The burner itself is not only controlled from the outside of the heater, but there is a regulator needle valve.

Made by the Edwards Manufacturing Company, Cincinnati, O. Price upon application.

OIL DISTRIBUTOR FOR FORDS.

This device is claimed to increase the mileage per gallon of lubricating oil in a Ford motor, reduce the formation of carbon to a minimum, prevent fouling of spark plugs and over lubrication, as well as scanty lubrication, improve the running of the motor and prevent loss of power and heating on grades. It consists of a series of troughs made of steel combined to form a single unit and placed inside the crank case, on the right hand side. The oil splashed from the small pockets by the cranks is caught and carried by the troughs to the rear step by step to the main reservoir or flywheel housing. This movement prevents the accumulation of lubricating oil under the cranks, especially No. 1. While extremely simple, it is claimed to be "miraculously efficient."

Made by the Evapco Manufacturing Company, 427 Grand River avenue, Detroit, Mich. Price, $3.00.



Oil Distributor for Fords.

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EKERN'S AUTO STANDS.

These are used around a garage or repair shop where extensive work is done. As it is always difficult to find anything to place under a car to hold it up when the axle or any part of the running gear has to be removed for repairs, Ekern's auto stands will be found valuable equipment for any shop. The car is jacked up to the desired height and the stands placed under the frame or sill of the car and the part to be repaired is removed. These stands are made of steel throughout and have no springs or clutches to break. They weigh about 11 pounds each and can be adjusted to any height from 20 inches to 37 inches. They are able to carry the weight of most any size of car.

Made by the Ekern Bros. Company, Flandreau, S. D. Price per set of two stands, $6.00.

EVAPCO GAS SAVER.

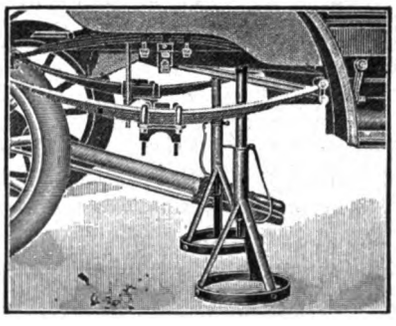
This device screws into the intake manifold between the carburetor and the cylinders, for the purpose of saving gasoline. It is a double valve arrangement that remains tightly closed when starting the engine and up to the time it is running smoothly. As the speed increases the valves open gradually, admitting more air to the mixture, thus regulating the richness of the mixture to obtain the best results. In climbing a hill, as the engine speed diminishes with the increase of load, the device gradually cuts off the air until finally it is supplying no auxiliary air. It is claimed that a saving of 77 per cent. has been shown by this device in a series of trials. It is easily installed by tapping a ⅜ inch pipe thread in the intake manifold and screwing in the gas saver. There are no adjustments to be made to the carburetor or the device and the same size fits any style or size engine. It is sold with a money back guarantee.

Made by the Evapco Manufacturing Company, 427 Grand River avenue, Detroit, Mich. Price, $5.00.

CLUTCH CONTROL FOR FORDS.

Shown in the cut is an attachment to be applied to Ford cars, giving to them in a manner some of the features of a selective sliding gear transmission in that it is possible to hold the gears in the neutral position without at the same time having tension on the brakes or requiring the use of the foot on the pedals. The device is attached by simply removing two bolts, requiring no machine work, drilling, tapping or fitting. When installed the movement of the pedal half way between first and second speed position puts it in neutral, where it will stay until released by a heel pedal conveniently placed to the foot. Further action of the speed pedal automatically releases this neutral attachment, making the clutch pedal work as usual.

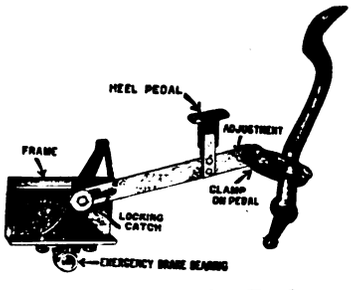
Made by the New York Coil Company, New York, N. Y. Price, $3.00.



Ekern Auto Stands.

Evapco Gas Saver.

Keystone Westcott Wrench.



Clutch Control for Fords.

Hytork Battery.

KEYSTONE WESTCOTT WRENCHES.

Keystone Westcott wrenches are widely used by mechanics where good work and time and money counts. The adjustable S wrench, with a malleable iron handle and forged steel jaws, the leader of the Keystone products, is made in five sizes. The line also includes square sleeve and Morse taper ratchet drills, descriptive illustrated literature of which can be obtained from the manufacturer.

The sizes and prices are as follows: 6", opens to ¾", 60 cents; 8", opens to 1", 75 cents; 10", opens to 1⅜", $1; 12", opens to 1⅝", $1.25; 14", opens to 2", $1.75.

Manufactured by the Keystone Manufacturing Company, Buffalo, N. Y. Distributed by Surpless, Dunn & Co., New York City and Chicago.

HYTORK BATTERY.

The claim for superiority of this new starting and lighting battery is based by the manufacturer on the plate used in it. It is built of the highest class of materials throughout. The grids are composed of antimonial pig lead, the same as any other lead pasted plate battery, but the secret of this battery lies in the composition of the "active material" that is pasted into the grids. Salesmen make a rather unique demonstration of this battery by taking one of the plates and bending it until the grid breaks without disturbing the "active material." This break down test is claimed to demonstrate the fact that inasmuch as all lead plate battery manufacturers are confined to the use of pig lead and antimony for their grids, this battery is as good as can be produced.

Made by the Heissler Storage Battery Company, Chicago, Ill. Prices upon application. Write for agency proposition, which is very interesting.

COST SYSTEM FOR GARAGES.

In a booklet entitled, "A Simple Cost System for Automobile Repair Shops," issued by the Calculagraph Company, 13 Maiden lane, New York City, a system for conducting repair and other jobs in garages is given. It not only provides the proprietor with a sound working basis from which to compute costs, but leaves the question of charges settled so that there will be no room for an argument with the customer as to the amount of labor expended. The time is accurately accounted for, both as to the amount expended on any one job, or the amount the help spend in the shop, by the use of the Calculagraph, which when used in stamping time cards shows at a glance when work was started, when it was stopped and the actual time consumed. The Calculagraph company have also issued an elaborate pamphlet describing the machine in detail and showing the various different departments of an industry and business in which they are successfully used.

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HARTFORD AUTO JACK.

This jack is made for the motorist who appreciates quality of construction, ease of operation and long, satisfactory service and is willing to pay a little more for these advantages. It is unusually easy working, due to the ingenious arrangement of the gears, which multiply power to a remarkable extent. It is claimed that a pressure of 15 pounds applied to the handle develops a thousand pounds of lifting power on the rack. It should then lift with ease the heaviest of cars because the weight of few, if any, is ever this much on one of the four wheels. It is built of the best of materials and intended to give a long service. Finished in black enamel and furnished in a handy canvas bag.

Hartford Auto Jack and Its Cover.

Made by the Edward V. Hartford, Inc., Jersey City, N. J. Price, $6.50.

EKERN'S EMERGENCY AXLE.

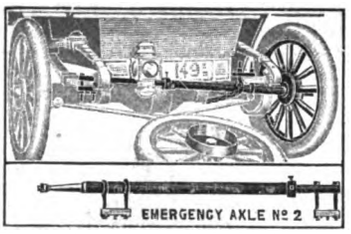
With this emergency axle any make of car disabled by a broken axle shaft or a locked differential can be easily and quickly rigged up so that it may be safely brought in to the shop at almost any speed. It is made of seamless steel tubing and is provided with clips to clamp the axle to the rear springs and can be adjusted to any length to fit any make of car. The spindle is made to fit the Ford front axle cones. The weight is about 28 pounds.

Made by the Ekern Brothers Company, Flandreau, S. D. List price, without the cones or wheel, $10.00.

MASON THERMO HEATER.

Motor car heaters afford one of the best means of stimulating sales and work in the shop during the dull winter season. Garage and repair shop men will find the Mason Thermo Heater a big business booster, and one on which they can obtain liberal profits and yet give their customers maximum satisfaction. This device is of the type known as "exhaust heater," and has the outstanding feature of being provided with thermostat control, by which the temperature is automatically regulated to any desired degree of heat. The heater itself sets a quarter of an inch above the floor of the car and is connected with the exhaust pipe by a flexible steel tubing. The heat passes through this tube to the centre opening of the heater, where it is divided and escapes at both ends of the plate, thus giving a uniform heat. The heater is 28 inches long, four inches wide and ⅞ of an inch thick, and is furnished either in cast iron, in black enamel, or bronze with heavy nickel plate. It can be installed in 20 minutes.

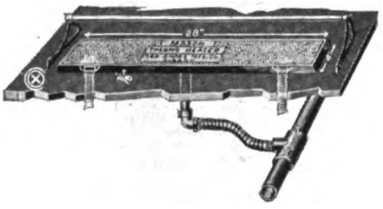
Marketed by the Cox Brass Manufacturing Company, Albany, N. Y. Retail prices, cast iron type, $10; bronze, $15. Write for liberal trade discounts.



Ekern Emergency Axle for Fords.

TENOX LIQUID GASKET.

A new and highly efficient method of making air tight joints in engines and other parts of the chassis began with the introduction of Tenox Liquid Gasket. Thousands of repair men and owners of cars who make their own adjustments and repairs are now using it and indorse it highly. Tenox is a liquid that is applied to the faces of flanges or the parts to be joined, the application being done with a brush, in the manner paint is applied, and almost instantly the liquid congeals and makes a joint that is impervious to oil, heat, gasoline, water or vibration. It fills up every irregularity or crevice in the metals before hardening and when set will withstand any pressure to be found in present day gas engines. It is ideal for oil and water connections, a little bit on the threads making a perfectly air tight joint. Tenox replaces copper, asbestos, fibre and paper gaskets and is much more economical and satisfactory to use. Some of the largest car manufacturers in the world are using it every day and indorse it highly.



Cutaway View of Mason Thermo Heater.

Marketed by the Tenox Products Company, 136 Liberty street, New York City. Prices range from 20 cents for ⅛ pint to $1 for a quart. A trial can, containing enough for almost any job, will be sent by the maker upon receipt of 30 cents.

AUTO BLOCK SIGNAL.

This device automatically indicates on its dial a dangerous condition of the engine, whether it is due to lack of oil, loose connection rods, too much carbon, scored cylinders, low supply of water or any other similar condition that might set the car afire. The Auto Block Signal has the faculty of instantly turning jet black when any trouble is about to occur, remaining red under normal conditions. Being attached to the head of the radiator it is always in plain view of the driver and is a constant reminder. The dial is on the driver's side of the device, while on the forward side one can have either a representation of the great seal of the United States, a fraternal emblem, or a crest or monogram. This signal is not a worthless ornament, but one of great practical utility. It is 2¾ inches in diameter and ¾ inch thick.

Marketed by the Auto Block Signal Company, 1260 Continental and Commercial National Bank building, Chicago, Ill. Retail price, $5 with U. S. seal or fraternal emblem; slight additional charge for crest or monogram.

ELGIN MOTOR POWER.

This is a preparation designed to be put into the fuel to give advantageous results. Among the claims for this article are that while it is non-injurious to the motor it increases power, mileage and efficiency. It allows a lower adjustment of the carburetor and tends to make the motor start easier. It keeps the spark plugs clean and softens and removes carbon. Its use reduces the cost of fuel 20 per cent.

Made by the Elgin Motor Power Manufacturing Company, Cedar Rapids, Iowa. Price, $1.50 for one full can.

How Tenox Liquid Gasket Is Delivered.

At Left, Dial Side of Auto Block Signal; at Right, the U. S. Seal.

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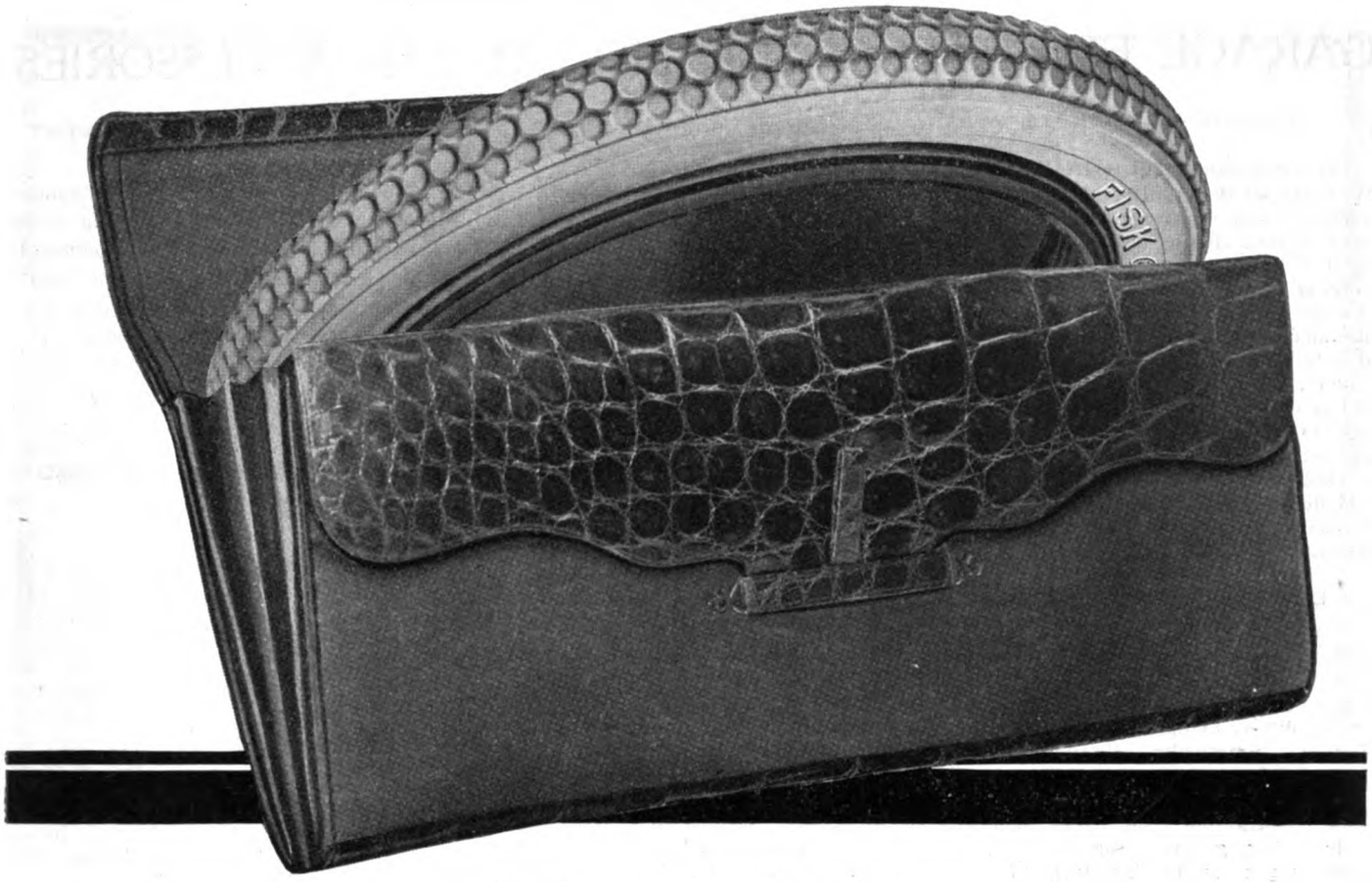

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FISK

Made To Fit All Pocketbooks

THE Fisk line of tires is complete, embracing any style a person could want, from the plain tread to the grey Non-Skid and a step beyond to the handsome RED TOP, the *Tire de Luxe.* But there is this to remember about Fisk Tires, and car owners know it—every Fisk Tire is 100% Fisk Quality, and there's nothing better than that.

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THE FISK RUBBER COMPANY

of N. Y.

Chicopee Falls, Mass

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GARAGE EQUIPMENT AND MOTOR CAR ACCESSORIES.

FITZGERALD GASKETS.

The Fitzgerald ready-to-attach gaskets are designed to simplify the operation of fitting gaskets, to insure a perfect fit and to economize in the amount of time and labor generally spent in fitting home-made ones. They are cut and trimmed to fit exactly on any car for which they are intended. At present they are obtainable for Fords, Vims, Dodges, Monroes, Engers, Oaklands, Maxwells, Chevrolets and Overland models 75 and 83. These gaskets make excellent equipment for any garage or repair shop and should be investigated.

Made by the Fitzgerald Manufacturing Company, Torrington, Conn. Write for prices.

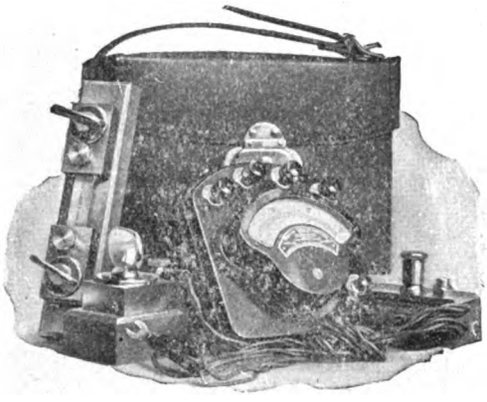
EVER-TIGHT PISTON RINGS.

The Ever-Tight piston ring, because of its unusual, but scientific construction, is said to absolutely prevent leakage, to fit any cylinder, however badly it is worn, practically eliminate carbon trouble and reduce maintenance cost. The chief feature of this ring is its three-piece construction, the three separate parts being grooved together by the ring's right angle interlock. Engine builders and engineers are agreed that this principle of locking is the best for safety and prevention of leakage. Because of the construction, the rings fit tightly without binding and, because they are exceedingly flexible, friction is reduced to the minimum, increasing the horsepower 15 per cent. and reducing the heat, wear and tear. Everywhere these piston rings have been used they give unqualified satisfaction. The maker is conducting a big national campaign of education among motorists.

Marketed by the Ever-Tight Piston Ring Company, 1423 Chestnut street, St. Louis, Mo. Write for prices, full description and special trade proposition.

STARRETT HACK SAW MACHINE.

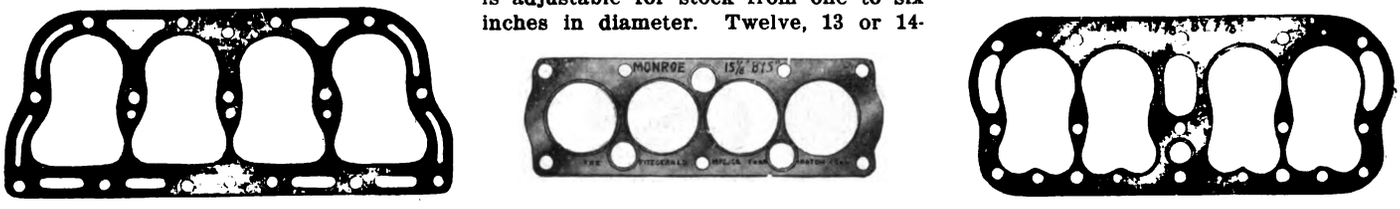
Four points in particular will commend themselves to practical shop men in this new equipment. The first is the stroke adjustment, which makes possible a stroke of practically the full length of the blade, regardless of the size of stock. The second feature is the foot treadle for raising the saw frames, the operator's weight being utilized. The third point is an oil dash pot that allows the machine to be started when frame is up and



Weston Testing Instrument.

prevents it from dropping and breaking the saw. It also eases the blade onto the work, so that the teeth do not bite in so rapidly as to strip them or break the saw. The fourth feature is the automatic locking device by which the saw is prevented from dragging on the return stroke and holding the saw frame at any height when the machine is stopped for setting work. The saw frame is mounted on a rectangular slide with a bearing 11¼" inches long, with adjustment for wear and provided with a quick-acting saw tightener. The stroke of saw is adjustable for stock from one to six inches in diameter. Twelve, 13 or 14-inch saws can be used, and the height of the machine overall is 48 inches; to the top of table it is 28 inches. It occupies a floor space of 14 by 32 inches. This is the first machine ever produced by the maker of Starrett tools and is protected by the Starrett guarantee as to material and workmanship.

Made by the L. S. Starrett Company, Athol, Mass. Price, $165; with floor pan, $175. Write for detailed description and bulletin.



Fitzgerald Ready-to-Attach Gaskets, the View at the Left Showing the Type for Overland 75; the Centre, the Monroe, and That at the Right, the Vim Gasket.

Faw's Searchlight Mirror Attached to Culver-Stearns Giant Searchlight.

WESTON TESTING INSTRUMENT.

The Weston garage testing instrument is designed to indicate and help locate accurately and quickly the troubles to which electrical systems are liable. Among these are those attributable to deteriorated or run down batteries; short circuits or grounds at any point due to worn or defective insulation; defective lamp sockets; open circuits due to vibration, abrasion or loose lamps; leaks that result in continuous discharge of batteries; brush troubles in the motor or generators or worn commutators, etc. The Weston instrument is designed to detect these troubles and is reliable, permanent in calibration and generally serviceable. The instrument illustrated is the Weston model 280 voltammeter, with external shunts for ampere measurements. It is pocket size, has a uniform and legible scale, is quick in action and is shielded from disturbing influences of external magnetic fields. With its six different ranges (300, 30 and three amperes and 30 and three volts and 100 millivolts) it is actually six instruments in one. The price of the instrument is exceedingly low for such equipment and the special inducements offered by the manufacturer will interest every progressive member of the trade.

Made by the Weston Electrical Instrument Company, 103 Weston avenue, Newark, N. J. Write for illustrated literature and prices.

FAW'S SEARCHLIGHT MIRROR.

Faw's Searchlight Mirror can be attached at any angle to the back of the Culver-Stearns Giant searchlight and thus serve a two-fold purpose. Not being permanently set in the light shell, as are other types of mirrors, it is possible to take off the Faw mirror when it is necessary to make repairs to the lamp. The mirror attachment makes for great flexibility in usage, it being possible and easy to set it at any angle to suit the convenience of the driver. This is the first mirror attachment of its kind and was designed by J. H. Faw of J. H. Faw, Inc.

Marketed by J. H. Faw, Inc., 41 Warren street, New York City. Price of mirror and attachment, $1.50; with Culver-Stearns Giant searchlight, $6.50.

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Wheels, Axles, Gears, Bearings, Cylinders, Pistons, Crankshafts, Camshafts, Crank Cases, Transmissions, Hubs, etc., for E. M. F. 30, Maxwells Q, F, K, G, Overland 38, 42, Reo 1910, Empire 20, Buicks 10, 17, 19, Oakland 1910, Cadillac 1909-12, Mitchell 1907-12, Flanders 20, Warren 30. Ask us about any part for any Standard Make or Orphan Car. Prompt service. Money refunded if not satisfied. AUTO PARTS CO., 4100 Olive St., St. Louis, Mo.

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RACING OR BUCKET SEATS, list price, $15.00.

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ACCESSORY SALESMEN to sell as side line on a strictly commission basis, excepting on Pacific Coast and S. W., an unguaranteed line of automobile casings, inner tubes and reliners. The only line sold on a basis of actual manufacturing cost. An unusual price proposition. Address P. O. Box No. 67, Morrisville, Pa.

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Develop, Market and Finance Patents.
Reorganize Industries.

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ALL PARTS FOR ALL CARS.
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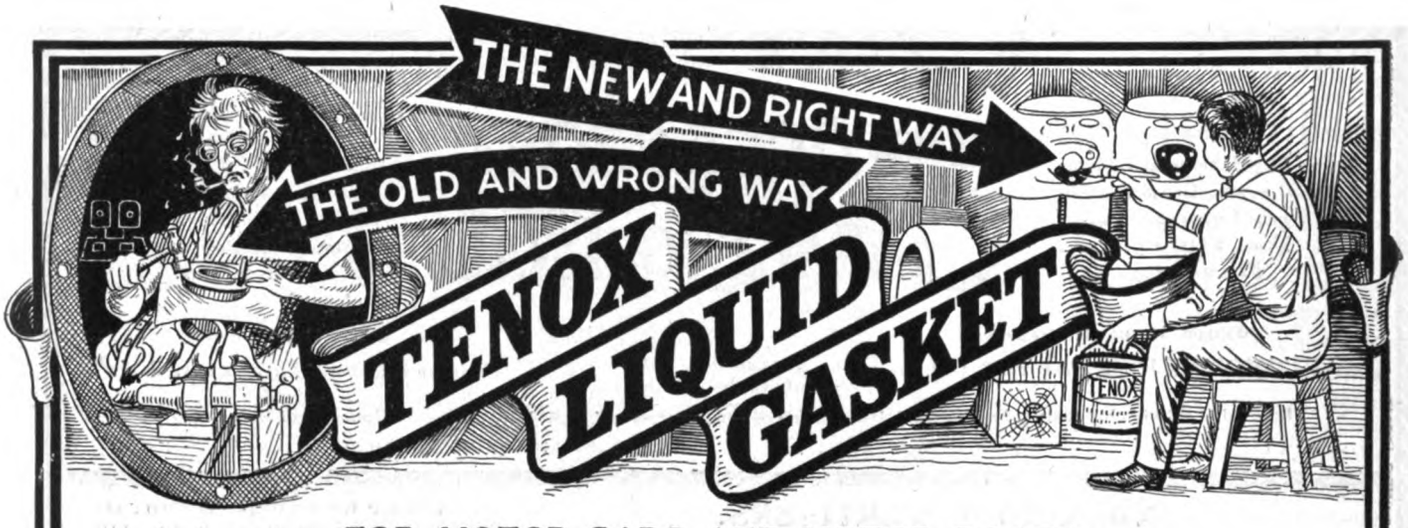

FOR MOTOR CARS AND MOTOR BOATS.

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Tenox Liquid Gasket takes the place of copper, asbestos or paper gaskets and saves time, labor and material, requiring no cutting or bothersome fitting. **IT ALWAYS FITS AND NEVER LEAKS. TENOX LIQUID GASKET IS APPLIED WITH A BRUSH; LIKE PAINT.**

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JOBBERS AND DEALERS—We guarantee perfect results or refund your money. Tenox has been tried, tested and proved. It is sold by thousands in the trade. If you do not sell or use Tenox, write today.

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No other gasket necessary or desirable. The cost of time and labor saved by using Tenox will generally pay for the whole job.

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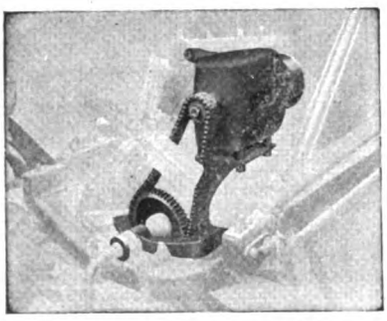
SYSTEM



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IT SPINS THE MOTOR

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The Disco is a single unit system, simple, light and compact. It operates with a 12-volt current, insuring a start every time. Its patent yoke bracket maintains perfect alignment and eliminates chain breakage. It is easily accessible, and does not interfere with the accessibility of the Ford engine.

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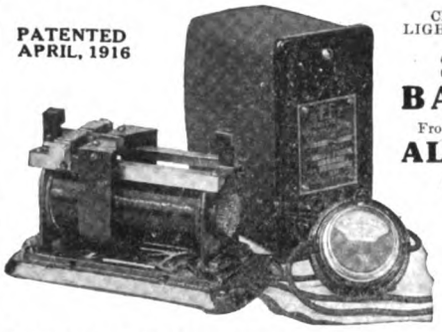
DETROIT, U. S. A.

F-F MAGNETIC RECTIFIER

PATENTED APRIL, 1916



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$15, Complete
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Jobbers and Dealers Throughout United States and Canada

Repair Tires—Make Money

Don't continue to plod along and be content with just a storage business with occasional sale of gasoline and oil. The garage that is making money today is the one that is vulcanizing tires with a

SHALER VULCANIZER

You don't have to go out and solicit business. The auto owner when he comes to you for supplies, gasoline, oil, etc., and knows you can repair his tires, will give you the job.

Give your customers this complete service they like, be ready to repair their tires, make money for yourself.

Anybody who can clean or adjust a car can operate a Shaler because of the simplicity of **Shaler Wrapped Tread Method** and **Automatic Heat Control.**

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The Largest Manufacturers of Vulcanizers in the World

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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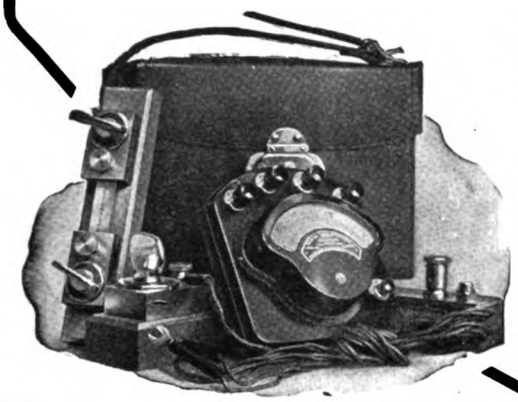

If you can repair and adjust Electrical Equipment, you will get the cream of the garage business and make more money. With the increasing demand for service of this sort, you must equip to handle the business, or lose it to your more enterprising competitor.

Weston

Model 280

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is your one great and urgent necessity, to enable you to locate electrical troubles quickly and apply the proper treatment to remedy them. Its possession will place you a long way ahead of your competitor not so equipped. This instrument is extremely accurate, durable and serviceable. It is the most practical electrial equipment you can install.

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WRITE US NOW for our Special Proposition to Garage Owners. It will show you how you can handl electrical apparatus intelligently and profitably.

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These assortments form a complete stock for the jobber or dealer, and fuse equipment sufficient for any garage or repair shop.

Aside from the great economy in buying assorted fuses, is the matter of quality and the knowledge of having the exact size, and the time saved instantly. Select the fuse wanted.

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Jobbers and dealers profits are extremely liberal.

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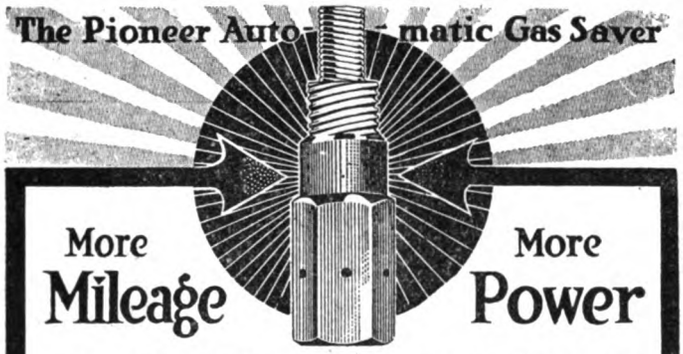
The Pioneer Auto- -matic Gas Saver



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The Simplest and Most Efficient of All Gas-Saving Devices—Effects a Notable Improvement in Engine Performance—Anybody Can Install It in Ten Minutes—For All Cars.

Absolutely Automatic—Nothing to Adjust

Dealers: The Aerofram actually does the work that more expensive gas-savers claim to do. When you offer it to your customer you do so with the certainty that he cannot duplicate its efficiency with any other device at ten times the price. It will positively add two to six miles per gallon—in many cases more. Hundreds of users have testified to this. Write for details. Liberal selling terms.

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A positive, accurate, quick and easily operated valve grinder. A perfect machine, as easily operated as any hand tool. Anyone can use it and do the highest grade work, and obtain a superior finish on valve seats.

To operate, the handle is pulled, which rotates the tool and valve; a spring on chain pulley pulls in the opposite direction, which reverses the rotation of the valve.

It easily fits in the tool box. For repairers it is a time and labor saving tool. When ordering state make, model and year of car or motor.

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FORD CAR TYPE

List Price $2.50

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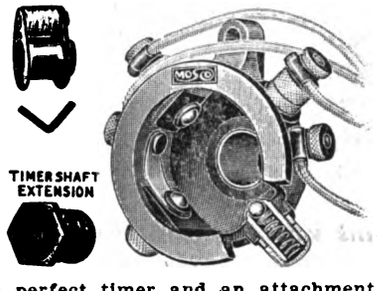

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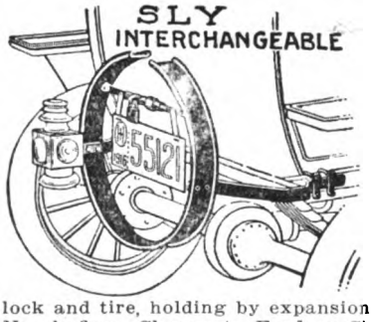
WALTHAM MASSACHUSETTS



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Interchangeables quickly adjustable for all Ford and Chevrolet tires and demountable rims. Combines place for lamp, number plate lock and tire, holding by expansion grip on inside of tire. No chafing. Clamps to Ford or Chevrolet frame without drilling or bolting. At all jobbers, or write

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Including three motoring magazines—one gives over to the pleasure car field—another to commercial vehicles and the third to industrial interests. Each magazine distinct.

The lowest rate ever made for leading motoring papers.

Write for details.

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The better your equipment, the better your work and the greater your volume of business. Start right. Use equipment which is

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WATERHOUSE & LESTER CO.
Exclusive California Distributors, San Francisco and Los Angeles

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUG. 24, 1912, OF

THE ACCESSORY AND GARAGE JOURNAL,

PUBLISHED MONTHLY AT PAWTUCKET, R. I.

For Oct. 1, 1916.

State of Rhode Island, County of Providence.

Before me, a Notary Public, in and for the state and county aforesaid, personally appeared William H. Black, who, having been duly sworn according to law, deposes and says that he is one of the owners of The Accessory and Garage Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the act of Aug. 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

PUBLISHER, W. H. & D. O. Black, Jr....Pawtucket, R. I.
EDITOR, W. W. Scott.....Pawtucket, R. I.
MANAGING EDITOR, W. R. Bickford....Pawtucket, R. I.
BUSINESS MANAGER, W. H. Black....Pawtucket, R. I.

2. That the owners are:

W. H. BLACK.....Pawtucket, R. I.
D. O. BLACK, JR.....Pawtucket, R. I.

3. That the known bondholders, mortgagees and other security holders owning or holding one per cent. or more of total amount of bonds, mortgages or other securities are:

M. J. BLACK, Mortgagee.....Pawtucket, R. I.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

(Signed) WILLIAM H. BLACK, Co-Partner.

Sworn to and subscribed before me this 13th day of Oct., 1916.

(Signed) THOMAS BESWICK, Notary Public.
[Seal] (My commission expires June 30, 1917

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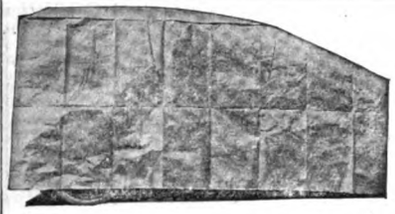

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Furnish efficient and economical protection for cars in dead storage. They are made of heavy, durable paper, in standard sizes to fit any cars.

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THE KENNEDY CAR LINER & BAG CO.
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Featherweight Alloy Pistons are lighter than pure aluminum, weigh two-thirds less than cast iron, give more speed, reduce vibration, save fuel and, make a four run as smoothly as a six.

Ford Type, in four sizes, $20 per set, with rings and pins.

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What are you doing about air?

Can you afford to have possible customers go by when 1-10 of one cent each would stop them AND HOLD THEM?
Communicate at once about Lectrofilater Air Service.

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The Automobile Journal

A magazine that is read by more than 20,000 car owners every issue.

It Will Interest You—

Send for sample copy. **Times Bldg., Pawt., R. I.**

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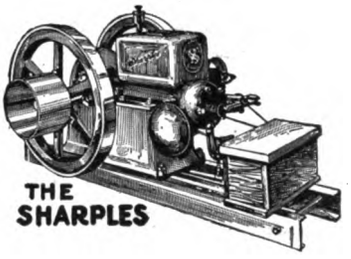
Jenkins Vulcan Spring Co.,
1402 Chestnut Street, St. Louis, Mo.

Gentlemen:—Please send proposition on agency for VULCAN springs.

Signed_____

Address_____



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Water has absolutely no effect on our magneto—the Sharples Engine will run perfectly in the pouring rain. Furthermore, the engine makes just as hot a spark when running very, very slowly (for instance when the engine is being started) as when it is running full speed.

The Sharples Engine has Double-Ignition. It has two complete, separate sparking systems, like the best foreign automobiles. **Either** spark will run the engine. **Both** sparks can be used for easy starting. This makes the engine practically trouble-proof.

The New Sharples Double-Ignition

GASOLINE ENGINE

is solidly built for very heavy duty and mounted on non-decaying skids. Gasoline tank is located at lowest point. Gasoline can't possibly drain out. It's pumped up by **suction-feed.** Endorsed by fire underwriters. Speed instantly changed by shifting lever. Doubly inspected and **guaranteed.** Four sizes, 2½ to 9 horse power.

Our liberal contract offers big opportunity to live dealers.

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INTAKE AND EXHAUST
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WILMO
Gas Saving Manifolds

The WILMO vaporizes all the remaining gas particles right at the valve openings, therefore makes your car run smooth at all speeds.

SOLD BY ALL DEALERS

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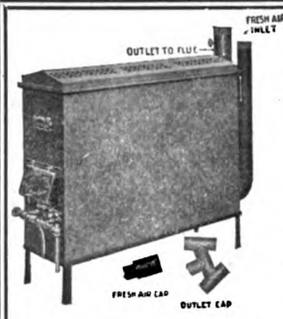
Successors to Wilmo & Amplex Co.



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Safe Garage Heater

Will heat any garage safely and well so owner can use his car all year 'round and keep it in best condition.

Dealers Make Money Selling These Heaters and Incidentally Increase Their Other Sales.

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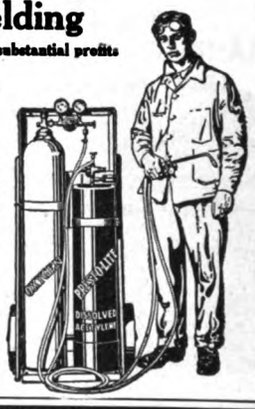
Add to Garage Profits by Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profits

PREST-O-LITE

Dissolved Acetylene
(Ready-made carbide gas)



adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for $60.00. (Canada $75). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.

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The ACME STEERING CONTROLLER is a simple and substantial Accessory, of practical value to all Ford Car Owners.

By the pressure of two coil springs acting upon the tie rod, the car automatically tends to a straight course, regardless of holes and obstructions, thereby relieving the strain of driving.

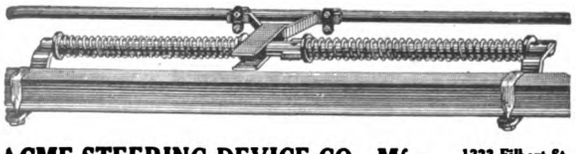
The ACME STEERING CONTROLLER is the only practical steering device for Ford Cars on the market. As proof of this not 1% of those sold to date have been returned. However, the Manufacturers stand ready to take back and make refund to the dealer for any machine returned.

It is easily seen from the description what the device will do, and the Ford Car Owner readily buys because of its simplicity and apparent effectiveness.

Have the device in stock and be in line for sales.

Be the first dealer to introduce the ACME STEERING DEVICE in your territory, and gain this advertising advantage.

Write to your jobber or to us for the discount to dealers.



ACME STEERING DEVICE CO., Mfrs., 1223 Filbert St. Philadelphia, Pa

FEDERAL
Double-Cable-Base
TIRES

FOR

"Extra Service"

FEDERAL RUBBER CO. of Ill.
CUDAHY, WIS.

The Manley Garage and Machine Shop Equipment

Designed and built to give economical, dependable service. Time and labor saving equipment that permits automobile repairer to do any size job right and quickly.

Air Compressors — *Portable Cranes*
Arbor Presses — *Screw Presses*

Our complete line is fully described, illustrated and priced in our catalogue. Every jobber, dealer, garage and repair shop man should have a copy. Free at request.

UNITED ENGINE AND MFG. CO.
HANOVER, PA.

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BEARINGS SERVICE COMPANY

GENERAL OFFICES . . . . DETROIT, MICHIGAN
Branches in all Principal Cities.

O-SO-EZY THE PERFECT CEDAR OIL POLISH

Standard equipment of each new car shipped by Abbott-Detroit, Briscoe, Buick, Chalmers, Chevrolet, Detroit Electric, Detroiter, Dixie, Empire, Grant, H. A. Lozier, Haynes, Hupmobile, Interstate, Jeffery, King, Maxwell, Oakland, Oldsmobile, Overland, Paige-Detroit, Reo, Saxon, Scripps-Booth, Stutz, Willys-Knight and Winton.

A Million New Users a Year. Are you getting your share of this profitable business?

Ask for our introductory offer with free "Silent Salesman."

O-SO-EZY PRODUCTS COMPANY

264-268 Jefferson Ave. DETROIT

First Prize and Gold Medal—Highest Award—Panama Pacific Exposition, San Francisco.

SOLD ONLY TO THE TRADE

THE MARTIN LINE

Tire Covers, Radiator Robes, Inner Tube Cases, Water Buckets, Engine Robes

All jobbers and dealers should send a sample order. Do it before you stock your 1917 line. **Quality, prices and discounts are not met by any other manufacturer.**

No catalogue is complete unless the Martin Line is shown and listed.

Send today for latest circulars and discount sheets.

THE MARTIN MANUFACTURING CO.

LANCASTER, OHIO

Automobile Mailing Lists 1916

28,108	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
8,123	Ford Dealers, price $17.50, or $3 per M by states.
285	Ford Dealers, Canada, $1.50.
28,463	Auto Garages, price $40, or $2.50 per M by states
29,806	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
45,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
940	Auto Supply Jobbers, price $4 for the list.
4,093	Auto Tire Dealers, price $3 per M.
2,404,150	Auto Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.
643,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

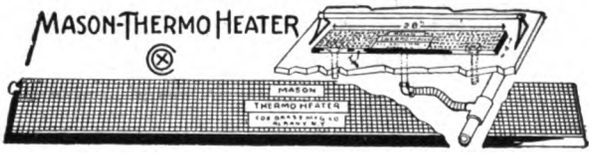
Write for particulars of any list you want.

A. F. WILLIAMS, Manager,

Phone Franklin 1182. 164 West Adams St., CHICAGO

This is the
CAR HEATER
That you have been looking for
And that you can sell !

Be an all year money making dealer by specializing in lines that sell constantly and that bring the big profits when owners are in the market and buying



This is a real car heater, the kind that affords service and satisfaction in all weather. A fitting attachment for any car, one that is automatic in control, and that eliminates back pressure, overheating, or gas escaping into the car.

Anyone can attach the Mason in less than an hour. It cannot become out of order, there are no parts to rattle, or holes to clog with dirt.

The Mason sets on the floor, not in it. A flexible steel tubing carries the exhaust gas to the center opening of the heater, where it divides and escapes at both ends of the plate, always giving sufficient and uniform heat.

LIST PRICE **Complete with all fittings ready to attach**

Bronze, Heavily Nickel Plated . .	**$15.00**
Cast Iron, Black Enameled . . .	**10.00**

Our proposition will interest the largest house, yet it is just as valuable to the small dealer
Write today for discounts and terms

COX BRASS MANUFACTURING CO.

Established 1872

11 Mt. Pearl and Van Wort Sts., ALBANY, N. Y.
1733 Broadway, NEW YORK CITY

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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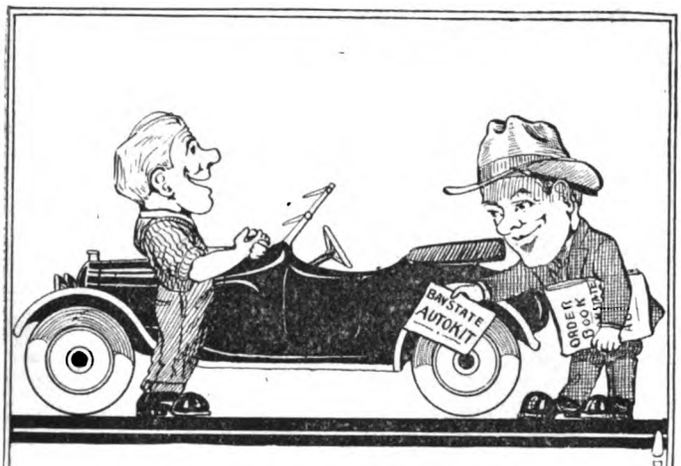


If puzzled you are as to what to do,
To remove old nuts and replace with new,
If a man with an order book you see,
Purchase a wrench set and work with glee.

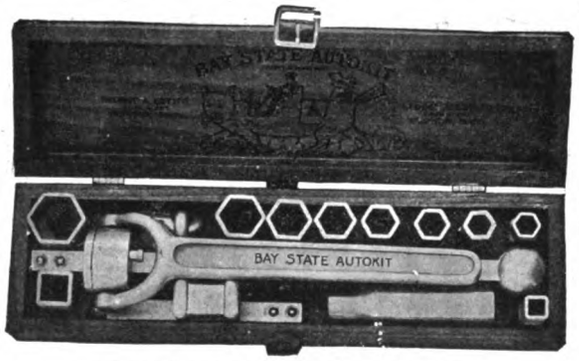
BAY STATE AUTOKIT

Thousands of Jobbers and Dealers recommend the Bay State Autokit.

They will tell you that there is a kit for the owner and others for repairers. Both complete with nothing lacking or needed. A wrench equipment for the hardest job in any service.

That with the sockets and swivelling reversible ratchet handle and extension shank, all nuts, bolts or set screws on any car or truck can be reached from any angle or position.

That in shop work or on the road you will always find just the size of wrench needed, and tools that will not break or fail you.



BAY STATE AUTOKIT NO. 2

Set No. 1, 31 Sockets - - -	$10.00
Set No. 2, 12 Sockets - - -	7.50
Set No. 3, 11 Sockets (For Ford Cars) -	4.00

Jobbers and dealers, car owners and trade interests of all kinds, are now buying special tools in large quantities. There is a Bay State Autokit that will meet every need.

Send today for catalogues and latest trade literature.

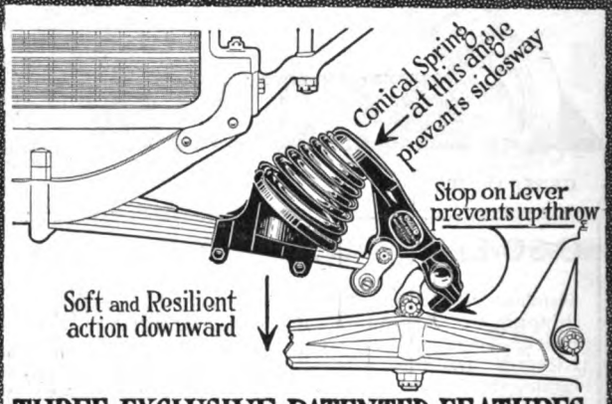
GEORGE A. CUTTER

Taunton Sales Agent **Mass.**

HASSLER

Shock Absorber

For FORD Cars



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"

— 100000 FORD OWNERS RECOMMEND IT —

WRITE FOR DEALERS TRIAL SET PROPOSITION

Robert H. Hassler, Inc.
Indianapolis, Ind.

$15 for a Set of Four

10

40

99

LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

FREE AIR SERVICE CURB STANDS

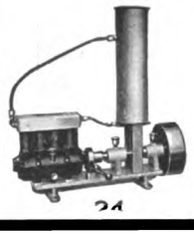
Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. *Save Money.*

LIPMAN AIR APPLIANCE CO.

199 Pleasant St., **BELOIT, WIS.**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50

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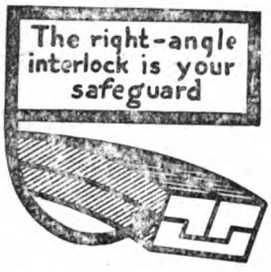
Beware of Imitations.



This perfect three-piece construction justifies the name—EVER-TIGHT. Note how accurately the right angles fit together. Engineers and Engine Builders acknowledge that this is the only proper construction for safety and prevention of leakage.

You'll Want Ever-Tight Piston Rings!

Ever-Tight Piston Rings absolutely prevent leakage. No need to rebore worn cylinders—Ever-Tight will fit them. They give compression in out-of-round cylinders as well as in true ones. They reduce maintenance cost and practically eliminate carbon troubles.

Ever-Tight Piston Rings consist of three separate parts grooved together into one ring by its own right angle interlock. They fit tight, without binding. They are flexible and friction is reduced to the minimum. The Ever-Tight is the only perfect three-piece piston ring on the market. **It is the leader.**

We are telling thousands of motorists these same facts about Ever-Tight Piston Rings. We are convincing them that they **must** install Ever-Tights. Are you ready to supply your customers with the ring they want? Be in line to meet the demand. Sell piston rings that satisfy the purchaser—that make the first-time buyer your steady customer. Sell Ever-Tights.

Write us today for details and prices to Dealers.

EVER-TIGHT PISTON RING CO.
1423 Chestnut Street St. Louis, Mo.

MOTORISTS HAVE LEARNED
That they get purer, cleaner gasoline; get all they pay for and get it quicker from

Wayne

CURB PUMPS

That's why they pass up all others whenever it's possible to reach a WAYNE—That's why a WAYNE would make business and money for you.

Get particulars and easy payment plan. Write now.

WAYNE OIL TANK & PUMP CO.
2 Canal Street Ft. Wayne, Indiana
Canadian Office: 1 Wabash Avenue, Toronto, Ontario

SELL SULLIVAN TRUCKS

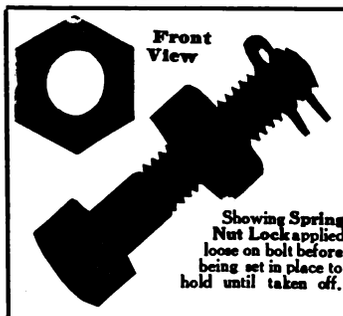
One of the few staple and practical trucks on the market.

Our selling policy and proposition is the most liberal ever offered to the trade.

One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
Rochester, New York



Showing Spring Nut Lock applied loose on bolt before being set in place to hold until taken off.

Why Not Be Sure

that every part of the engine; chassis, or body of the car you make will stay together until taken apart?

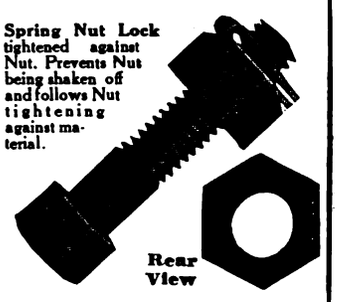
Spring Nut Locks

are the simplest, surest, safest device to positively lock any nut on any bolt. Resists all vibrations. Cannot harm threads. Easily applied. Released whenever desired.

Cheapest and Best.

Manufacturers, Jobbers, Garage Men, Repair Men and all Dealers should write for prices on sizes now available. Orders filled in rotation. All sizes by January 1st.

Spring Nut Lock Company
651 Transportation Bldg.
Chicago



Spring Nut Lock tightened against Nut. Prevents Nut being shaken off and follows Nut tightening against material.

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BATTERY CHARGING BRINGS BIG PROFITS

The H. B. Set charges from one to six auto starting and lighting batteries at one time. Current costs about 15c per battery, and you get from 75c to $1.50 for each battery charged. FIGURE YOUR PROFITS. Every Auto Storage battery needs a full charge outside the car at least once in two months, as a well charged battery **means more power, brilliant lights and quick starting.**

H. B. users are averaging $20.00 to $60.00 per month CLEAR PROFIT.

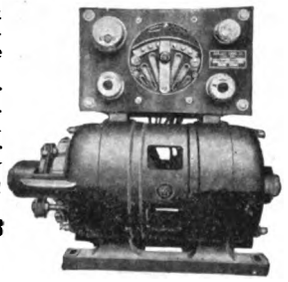
Read What Some of Our Satisfied Users Say:

Robt. Keska, Newark, Ill., says—"The H. B. generator is a good paying investment. It works fine, and is an easy money maker."

Grover Bussard, Lipscomb, Texas, says—"Clearing $35 per month from battery charging on a battery business of $40."

Chas. Hoverstock, Topeka, Ind., says—"Clearing $48.85 on a battery business of $50.00 a month."

$10.00 PLACES THIS MONEY MAKER IN YOUR GARAGE, the balance in fourteen monthly payments of $10.00 each. Every H. B. Outfit will show you a most substantial profit and will be paying for itself.

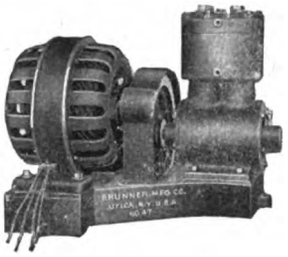


Send in this ad with your name, we'll gladly send particulars about this profit making H. B. Set. Send your name NOW. DELAYS PAY NO DIVIDENDS. DO IT NOW!

Hobart Brothers Company

Box 313 TROY, O.

BRUNNER AIR COMPRESSORS



have consistently demonstrated their sterling worth in the garage—ever since the garage business has been a business----

The Brunner is honestly built and honestly advertised.

Be Honest With Yourself Mr. Garageman

investigate the Brunner Line before you order your new air compressor---send for our catalogue and handbook on compressed air---get the facts---protect yourself against trouble.

The Brunner Air Compressor has survived endless competition and the fact that there are more Brunners going into garages today than there are compressors of other makes---should convince you that the Brunner should be your choice.

Write for particulars and name of Brunner Jobber covering your town.

BRUNNER MFG. CO.

Main Office and Plant
Dept. A
UTICA, N. Y.

Cincinnati Branch
419 First National Bank Bldg.
CINCINNATI, OHIO

BOWSER

ESTABLISHED 1885

Superiority, in construction and service, is a distinguishing feature of Bowser equipment that insures perfect satisfaction for all concerned. It was the following of this policy of "built-in quality" for 31 years that so firmly established the Bowser reputation.

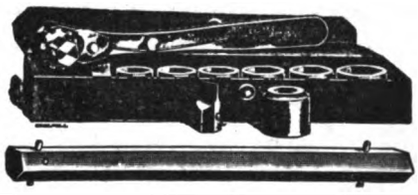
Today the name BOWSER

on oil handling or storage equipment of any kind is the hallmark of excellence like "Sterling" on silver or "Mazda" on lamps. It reflects a certain distinction upon all users---proof of their good judgment as well as their desire to own only the best.

S. F. BOWSER & COMPANY, Inc.

FORT WAYNE, INDIANA

SALES OFFICES IN ALL CENTERS REPRESENTATIVES EVERYWHERE.



DON'T USE A COLD CHISEL

USE THE LANE UNIQUE RATCHET WRENCH

FOR CLOSE AND DIFFICULT WORK.

IT TURNS NUTS VERY CLOSE TO THE WALL.

is easily and quickly reversed, sockets will not break or split and fits three standards and automobile nuts.

MADE FOR HEAVY SERVICE

Wrench is machine made. Sockets are turned from steel bars, cold broached and case hardened. Fully warranted. Every repairman should have a UNIQUE RATCHET WRENCH SET.

SPECIAL SETS FOR FORD CARS

Dealers, Jobbers and Garagemen, Write for Trade Discounts.

STANDARD SET Contains:
1 Handle 7 inches in length.
2 Screw driver bits.
7 Sockets to fit semi-finished hex. nuts as follows:
U. S. Standards from 1-4 in. to 1-2 in.
A. L. A. M. Standards from 5-16 in. to 11-16 in.
Cap screw heads from 5-16 in. to 5-8 in.
Price in leather case $2.50.

THE FORD SET Contains:
1 Handle 7 inches in length.
2 Screw-driver bits.
1 Extension bar 7 in. in length.
SIX SOCKETS to fit all nuts and bolt heads on Ford car, including the cylinder head.
Price in leather case $3.00.
Sold by dealers everywhere.

WILL B. LANE, Manufacturer, 180 N. Dearborn Street, Chicago, Ill.

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The elapsed time recorder

Garage Men You Will Sell More Cars

if you eliminate the disputes over repair charges.

Satisfaction with maintenance and repairs will insure a new order for the same make of car.

Calculagraph **elapsed time** records of repair jobs cannot be disputed.

Elapsed time is what you buy from your workmen and sell to your customers. It should be accurately measured.

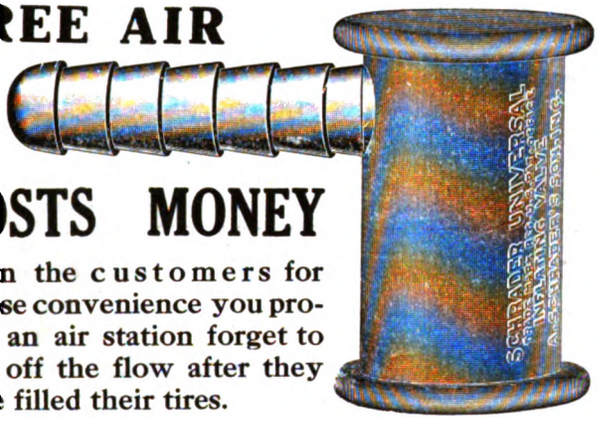
One Calculagraph will print the starting and finishing time and compute and print the elapsed time for all your workmen.

Send for free booklet W., illustrating a complete set of forms for a simple cost system for garages.

CALCULAGRAPH COMPANY

1476 Jewelers Building **New York City**

FREE AIR



COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Automatic Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from 1-4 in. to 5-8 in.

PRICE ONE DOLLAR

Manufactured by

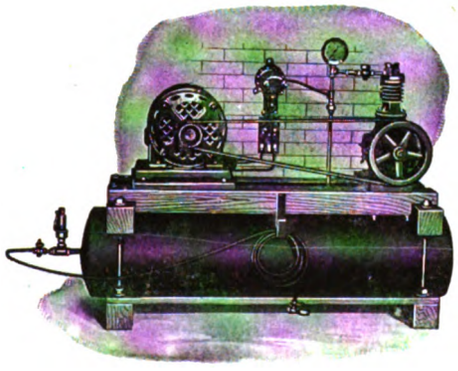
A. SCHRADER'S SON, Inc.

800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

GARDNER

STATIONARY FREE AIR UNIT



FOR

SERVICE ECONOMY DEPENDABILITY

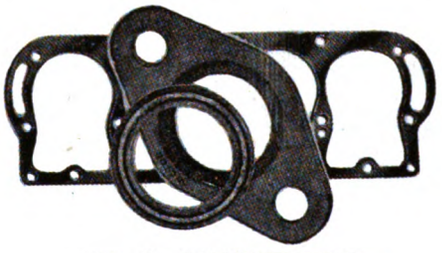
A Gardner Outfit of this type installed in *your* garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY

126 Williamson St., Quincy, Ill.

Singer Bldg	Fisher Bldg	5 First St.
New York City	Chicago	San Francisco

STEVENS & CO. NEW YORK



GASKETS

AMONG the many automobile accessories for which jobbers and dealers look to STEVENS for their main supply, Gaskets are one of the most important.

We are exclusive distributors of—***McCord Copper, Asbestos Gaskets,*** of which we always have a complete stock on hand.

Among them, in all sizes are the:—

ROUND CLOSED TYPE, ROUND FRENCH TYPE, STANDARD FLANGE EXHAUST TYPE.

COMPLETE SETS FOR FORDS

Of particular interest to the dealer and repairman are the

BOXED ASSORTMENTS

which give a great range in sizes, without the necessity of carrying a large stock.

It will repay you well to ask your jobber for prices on these gaskets.

STEVENS & CO.

Manufacturers of Auto Accessories

375 Broadway **New York**

MANUFACTURERS OF Automobile Parts & Accessories

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TO KEEP THE BODY OF YOUR AUTOMOBILE SHINING LIKE A MIRROR USE BLUE RIBBON AUTO BODY GLOSS AND FURNITURE POLISH

Absolutely contains no WAXEY or GUMMY substances.
Does not coat the surfaces and catches no dust.

BLUE RIBBON AUTO BODY GLOSS

is a scientific "tonic" which revives and renews all highly finished, varnished and enamelled surfaces. It keeps the finish flexible and full of life, which prevents the original gloss from becoming dead or dull looking.

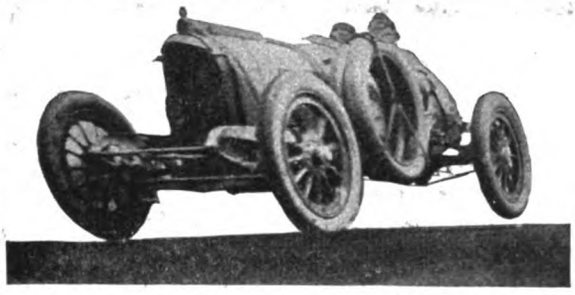
WAX and GUM preparations simply coat the surface. The coating soon becomes dead. Then it cannot be removed. This ruins the original gloss and finish. Lastly, repainting and refinishing is the only remedy. Ask any expert or practical painter or chemist.

BLUE RIBBON AUTO BODY GLOSS cleans, renews and repolishes or revives the ORIGINAL FACTORY GLOSS.

Ask Your Jobbers or Dealers or Write Us.

INTERNATIONAL METAL POLISH COMPANY, INDIANAPOLIS, IND.

Manufacturers of the Famous Blue Ribbon Polishes and Soaps.



Racing service is the supreme test for any automobile lubricant.

DIXON'S GRAPHITE Automobile LUBRICANTS

have passed this test so successfully that they are now standard with a vast majority of the drivers.

Dixon's Lubricants render the same unsurpassed service to owners of pleasure or commercial vehicles.

Send for booklet "Words of Wisdom," No. 49-G

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

ESTABLISHED 1827

G-16

HESS-BRIGHT BALL BEARINGS

"THE INIMITABLE BEARING"

DISTRIBUTORS IN EVERY CITY OF IMPORTANCE

The HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA, PENNSYLVANIA, U.S.A.

New Ford Carburetor Attachment

that's making a lot of money for dealers everywhere

Makes Ford cars start instantly—stops the roar and clatter—makes the Ford cooler running at all speeds—practically eliminates carbon—makes the engine so flexible it can be throttled down to less than four miles an hour on "high"—MAKES A GASOLINE SAVING OF 15% to 50%, or $1.50 to $5 per month. Write us to send you a

MyleMayker

Copyright 1916, Myle-Mayker Co.

MYLE-MAYKER COMPANY

Dept. 11-J, 323 East 33rd Street, CHICAGO, ILL.

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Equip Your Garage With a
WHITNEY HAND MILLER

so you won't have to turn away profitable repair business, or turn it over to the machine shops.

With this all around machine you can handle the work in your own garage. You can avoid delays; you can accommodate customers.

The Whitney will take care of any milling job in the line of auto repairs. With it you can cut gears, cams, sprockets, do key seating, straddle milling, profiling, slotting, slabbing, drilling, die sinking and countless other operations.

Simply send a postal for catalog No. 3

THE WHITNEY MFG. CO., - - Hartford, Conn.

CHAINS-KEYS-HAND MILLING MACHINES

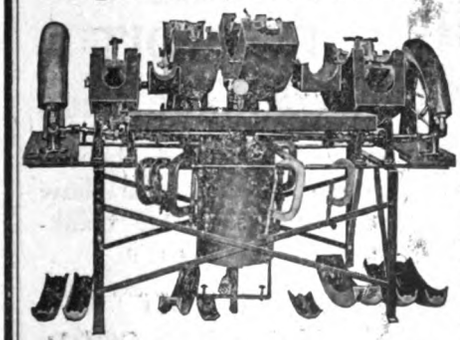
"NORMA"

BALL BEARINGS

(PATENTED)

The limits of service of a machine are set by its weakest part. To protect against bearing troubles and failures, the most widely known and dependable ignition apparatus, lighting generators and starting motors made in America, are fitted by their makers with "NORMA" Long-Service Bearings.

Big Money Double Treading



Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch inclusive.

VANDERPOOL CO., Springfield, Ohio
and 1044 S. Main Street, Los Angeles, Cal.

THE NORMA COMPANY OF AMERICA
1790 BROADWAY —— NEW YORK
BALL, ROLLER, THRUST AND COMBINATION BEARINGS

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Little Giant Combination Screw Plates

Both United States and S. A. E. Standards

These assortments are particularly valuable in the automobile repair shop where a considerable amount of threading is done. Each die is contained in its own collet and is adjusted to size. There is also a Bit Brace Die Holder for cleaning up battered threads in hard-to-get-at-places.

Every need of the manufacturer, the garage and repair man, or the car owner who makes his own repairs, for tap and die assortments can be supplied from our big line.

Send to-day for the circulars "Tools for the Automobile" "First aid in the up-keep of the Automobile".

Greenfield Tap and Die Corporation, Greenfield, Mass.

New York Chicago Philadelphia Galt, Ontario

Time Savers

For Charging Storage Batteries

HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.

Made of steel—lead plated—may be used over and over again.

No. 13-A—¾" spread of jaws.
No. 21-A—1½" spread of jaws.

Your money back without quibble if not entirely satisfied.

Single Lots, Each 15c Lots of 10, Each 12 1-2c Lots of 100, Each 10c

R. S. MUELLER & CO., 431 High Ave., S. E., Cleveland, Ohio.

ELECTRIC GLUE POT

Mabey's Dry Heat Electric

GLUE POT

No flame; no soot or smoke. All danger of fire is eliminated.

Capacity	Price without cover
1 qt.	$ 9.50
2 qts.	11.00
3 qts	12.75
4 qts.	15.75

Century Automobile Cigar Lighter, Complete $1.00 Each, F. O. B. Indianapolis.

DEALERS—Write For Prices.

MABEY'S ELECTRIC & MFG. CO.

968 Ft. Wayne Ave Indianapolis, Ind.

Will pay for itself in a few days

The Superior
Vulcanizer

Be independent. Do your own Vulcanizing.

SUPERIOR'S are simple, efficient and inexpensive.

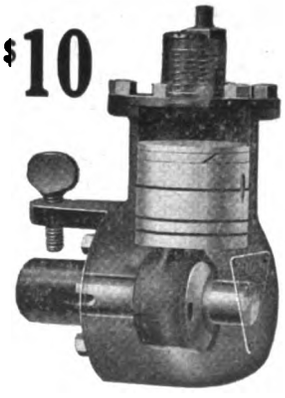
They do all kinds of repairs on casings and tubes

Write for descriptive catalog

SUPERIOR VULCANIZER CO.

A-16 Fulton Avenue ROCHESTER, N. Y.

$10



YOU CAN SELL A

DETROIT Gearless Tire Pump

to 75 per cent. of the motorists to whom you show it. It goes on the crankshaft when you use it.

DETROIT ACCESSORIES CORP.

519 Hillger Avenue Detroit, Michigan

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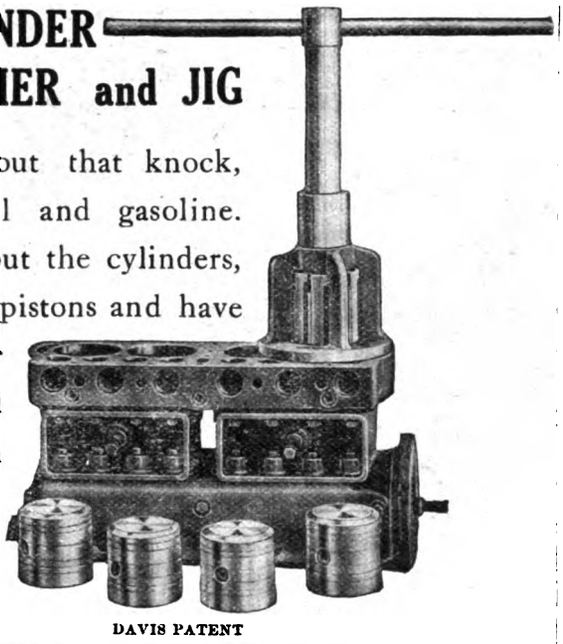
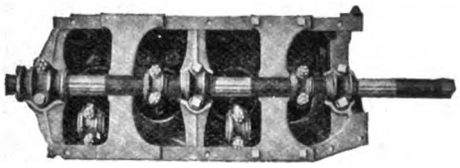
BETTER Tools Mean BETTER Work BETTER Profits BETTER Business

CYLINDER REAMER and JIG

Take out that knock, save oil and gasoline. Clean out the cylinders, fit new pistons and have a motor as good as when new.



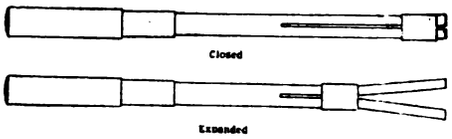
DAVIS PATENT



FORD CONNECTING ROD AND MAIN BEARING REAMER

NO MORE SCRAPING
A FUSSY JOB
MADE EASY.

TWO ALIGNING GUIDES FURNISHED WITH REAMER



(Patented)

Removes
- Steering Knuckle
- Spindle Arm
- Spindle

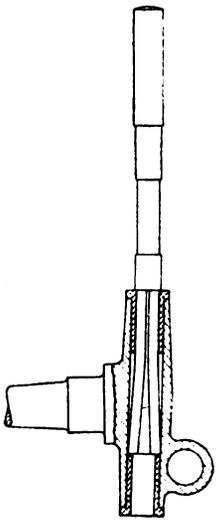
} BUSHINGS in a JIFFY

Made of Tool Steel and nicely finished.

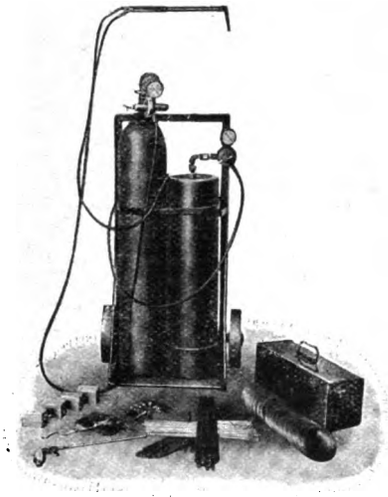
Indispensable to the repairman or the owner that does his own work.

When removing Steering Knuckle Bushings it is not necessary to remove wheel.

Pays for itself in a few minutes.



Jiffy Bushing Extractor for FORDS

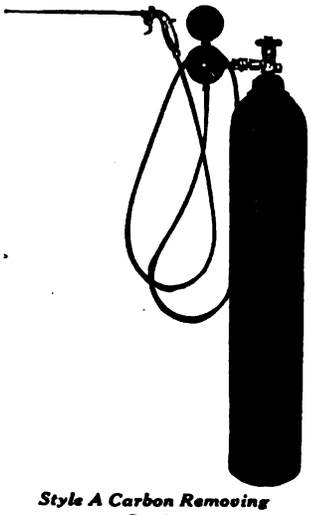


Style A Welding and Carbon Removing Outfit with Truck
(Tanks not included)

Specialists in Oxy-Acetylene Welding Equipment since the method was first introduced.

We carry in stock and can ship promptly outfits for

Welding
Steel Cutting
Brazing
Soldering
Carbon Removing
Lead Burning
Battery Work



Style A Carbon Removing Outfit
(Tank not included)

Ford Type

PISTONS *ALL MAKES*

Buick Type 3¾"

PISTONS *Standard and Oversize*

4 1/8" Overland Type

Write for General Catalogue and Prices. Get Name of Jobber Nearest You Handling Our Line.

The G. H. Dyer Company, Cambridge, Mass.

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Giant Searchlight

1917 MODEL

List Prices:

With Mirror $6

Without Mirror $5

The Most Remarkable Searchlight Value Ever Offered to the Trade.

Hand-operated searchlights are not only a utility, but are a necessity and are used by a great number of owners. There is universal demand for a high-quality, moderate-priced lamp.

GIANT SEARCHLIGHTS are designed to afford the fullest satisfaction in service and have every desirable quality—some of these exclusively. Though the list price is low, no better equipment is obtainable at any price.

It is absolutely guaranteed and measures to Culver-Stearns standards in design, material, finish and appearance.

GIANT SEARCHLIGHTS are powerful projectors and are strongly built. The outside shell is steel, black enameled; the reflector is silver-plated over nickel on brass; the brass glass retaining rim is heavily nickeled, and the pressed steel bracket is constructed so that the lamp, carefully balanced, will remain wherever set. The lamps are "Mazda C" (gas-filled) only. The lamps are sold without mirror, the mirror being detachable and adjustable wherever desired by the driver. The handle operates a switch of novel construction that never fails—it cannot be broken and there is no button to lose.

This is an automobile equipment that will be bought at sight. It will be the "year's best seller." The discounts to dealers are extremely liberal.

Full Information and Catalogue at Request.

CULVER-STEARNS MFG. CO.

Main Office and Factory
Worcester, Mass.

Sales Office
Detroit, Mich.

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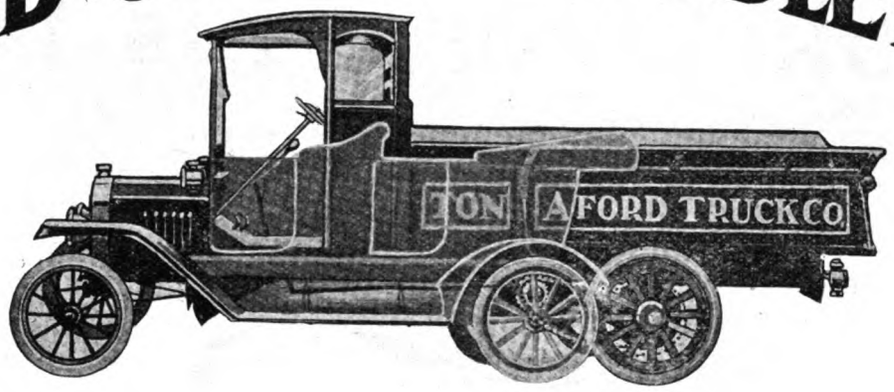
FORD CARS DO DOUBLE DUTY



WITH THE TON-A-FORD EXTENSION CHASSIS

(TRADE MARK—FOREIGN RIGHTS RESERVED)

EITHER AS POWERFUL TON TRUCKS OR PLEASURE CARS

The TON-A-FORD is the only practical convertible Extension Chassis on the market.

Converts a Ford car into a powerful One-Ton Truck---adaptable to any line of business---which can be quickly converted back again into a pleasure car.

Readily Attached by Ford Owner

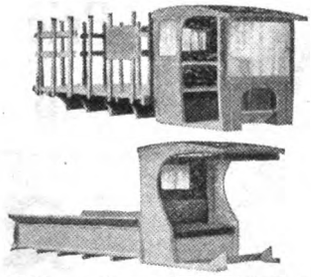
Quick-clamping devices quickly connect the TON-A-FORD Extension to Ford Chassis without any drilling of holes, cutting or machining of axle, removal of spring or brake drums. Original Ford chassis is kept intact—merely remove Ford body and rear wheels before attaching Extension.

All Difficulties of Earlier Models Overcome

after exhaustive tests of parts and materials and the results of road and load strains on earlier models put on the market.

This I-Beam Axle was specially designed after many tests. It CANNOT buckle.

Special I-Beam Axle—Guaranteed to carry 50% overload.



With our line of TON-A-FORD Brand Ton-Truck Bodies, dealers secure additional profits—purchasers of Extension Chasses are also prospects for Bodies.

Dealers Make Big Profits!

TON-A-FORD is the Most Practical and Easiest-to-Sell Proposition for Converting Fords into Ton-Trucks

Guaranteed Ton-and-a-half capacity. It gives the right loading space, the right distribution of space—and weight. It is so efficient and economical that you can conscientiously say to every prospect:

"YOU CAN AFFORD A TON-A-FORD"

There is still some good territory open. Write or wire today for our proposition and complete specifications. Dealers everywhere are snapping up territory for the TON-A-FORD—no other device is as practical or has the many selling features.

$345 F.O.B. RACINE

TON-A-FORD TRUCK CO. 220 Sixth St., Racine, Wis., U.S.A.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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DEALERS—

Look Over This List!

You can check off every car in your town. They all represent prospective customers.

Every make of car listed can be easily, quickly and inexpensively equipped with a

Crane PATENTED

Engine Driven Tire Pump

Because of the special alloy packing ring between piston and cylinder it pumps air Free From Oil.

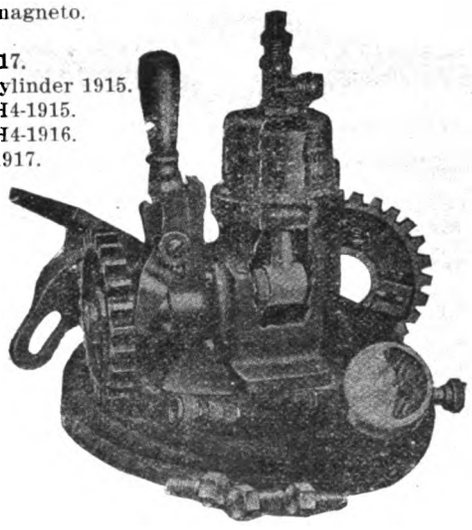
This big feature in connection with others make the Crane 97% efficient. The fastest pumping engine driven tire pump on the market.

A sure seller, an easy seller---it offers big profits.

We are prepared to furnish CRANE engine driven tire pumps complete with attachments for application on the following list of cars:

Ford, all models.
Buick C 24-25.
Buick C 36-37.
Buick D 44.
Buick D 45.
Oldsmobile 43.
Kissel Kar 6-42.
Empire 1916-Six.
Velie model 22 1916.
Velie model 28 1917.
Paterson 4-33-1914.
Paterson 6-1915.
Paterson 6-42 1916.
Hudson 6-40-1915-1916.
Grant T & V 1915-1916.
Kissel Kar 38 or 100 point 6.
Hollier 6 cylinder 1917.
Davis model G 1916-1917.
Bour-Davis 1916-1917.
Chandler 1914-15-16-17.
Dodge 1915-16 with magneto.
Hupmobile model K.
Jeffrey 4-1916, 472-1917.
Studebaker 4 and 6 cylinder 1915.
Chevrolet H1-H2-H3-H4-1915.
Chevrolet H1-H2-H3-H4-1916.
Abbott-Detroit 1916-1917.
Maxwell 1916-1917.
Overland 59-69-79.
Overland 80-81.
Overland 83-83B.
Overland 84.
Reo 1912 to 1914.
Reo 1915-1916.
Reo Model F 1917.
Grant K 1917.
Jackson 34.
Jackson 46.
Oakland 38.
Hudson Super Six.

We are continually designing fittings for other makes of cars.



Send for Complete Information Today.

Price Complete

$8

BAY STATE PUMP COMPANY

100 PURCHASE STREET **BOSTON, MASS.**

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42% to 54% Greater Gasoline Mileage

By Actual Official A. A. A. Tests

The Wilmo Manifold promises to be the most successful accessory staple of the year.

For it solves the problem of increased gasoline mileage and freedom from carbon troubles.

Recent official A. A. A. tests show 42 per cent to 54 per cent greater gasoline mileage through Wilmo Manifold use. From such a source these figures are deeply significant.

The Wilmo Manifold insures this new efficiency because it completely vaporizes gasoline so that the gasoline and air enter the cylinders as a light, superheated mixture with combustion quality developed to the highest degree.

The car gets away immediately with all cylinders hitting. The motor runs more smoothly at all speeds. And since every particle of gasoline is utilized in the form of actually vaporized, high-power gas, there is no carbon deposit to foul cylinders and plugs.

In fact, virtually all valve and carbon troubles are abolished.

Through the use of a Wilmo Manifold a clean engine will stay clean. Keeps the car in full commission during winter by eliminating engine trouble due to cold weather.

The Wilmo Manifold is not a mere attachment which under only certain favorable conditions produces the above remarkable results, but is a scientifically engineered device which once affixed becomes an integral part of the car, insuring added efficiency at all times.

A real factory, real men, and a real guarantee are behind the Wilmo Manifold. Thousands are already in use, despite no broad advertising until now.

Costing but from $7.50 up, according to make of car, the Wilmo Manifold is within easy reach of every motorist. In added mileage alone it will pay for itself many times over every season.

Attaching it is simplicity itself. All done in thirty minutes with a monkey-wrench. No holes to bore—no complicated directions.

From now on the Wilmo Manifold will be extensively advertised in the country's foremost publications. Wherever possible every sale will be a dealer sale.

Interesting results of official tests, together with prices and unusual selling proposition, will be sent to dealers and jobbers upon request.

Without doubt this is the biggest winter money-maker ever introduced. The advertising is now appearing. So plan to reap the full benefit of it by writing NOW!

The Whittier Company
First National Bank Building Chicago

Wilmo Manifold

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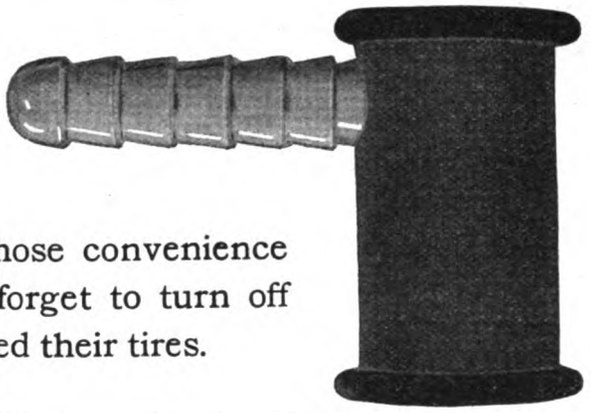
Something New

FREE AIR COSTS MONEY



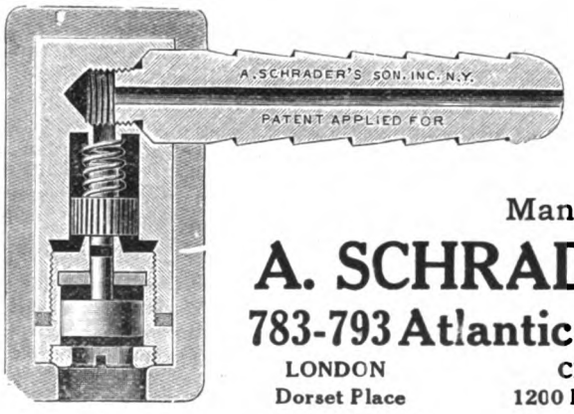
when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

SCHRADER AUTOMATIC INFLATING VALVE

to your air hose

Thanks to this appliance your bottled air locks itself into the tank the minute the inflating valve is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating-valve against the tire-valve and you turn it off by removing the device from the tire-valve.



Made to fit any diameter hose from ¼ in. to ⅝ in.

Price One Dollar

Manufactured by

A. SCHRADER'S SON, Inc.

783-793 Atlantic Ave., Brooklyn, N.Y.

LONDON Dorset Place | CHICAGO 1200 Michigan Ave. | TORONTO 20-22 Hayter St.

Schrader Products were awarded a Grand Prize and Two Gold Medals at the Panama-Pacific International Exposition. "There's a reason."

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Spark AC Plug

America's Champion

The Standard Spark Plug of America

THE ambition of every maker is to have his plugs selected as standard equipment on the best makes of cars.

All have an equal chance to win this honor. The manufacturers of these "Cars of Quality" only make their choice after exhaustive tests, based on actual performance. "A survival of the fittest."

AC plugs are regular equipment on the cars listed in the opposite panel—

They met the tests. Don't experiment. These leading manufacturers have done that for you. Follow a safe lead. Use the plug with AC *burnt into the porcelain.*

AC Spark Plugs are standard equipment on the following cars after eliminating competition.

Packard	Buick
Pierce-Arrow	Oakland
Cadillac	Oldsmobile
Marmon	Jeffery
Hudson	Daniels
Chalmers	Sandow Truck
Hupmobile	Federal
Chandler	G. M. C.
Haynes	Gramm-Bernstein Truck
Chevrolet	Kissel Kar
Dort	Palmer-Moore
Cole	Murray
Reo	Bour-Davis
Paige	Premier
Peerless	Knox
Dodge Brothers	McLaughlin (Canada)
Stearns-Knight	Monroe
Saxon	Netco Truck
Stutz	Moreland Truck
National	Pilot
Velie	Crane-Simplex
Jackson	Singer
Apperson	Stephens
Davis	United Truck
Detroiter	Wilcox Trux
Paterson	Jordan
McFarlan	Liberty
Westcott	Signal Truck
Lexington-Howard	Republic Truck
Scripps-Booth	Sterling Truck
Chase Truck	
Brockway Truck	

CHAMPION IGNITION CO., Flint, Mich., U. S. A.

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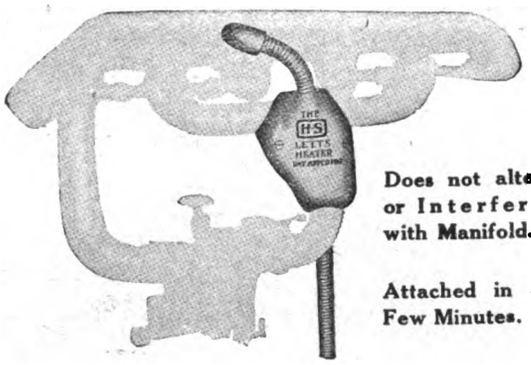


The H-S Letts Heater for Ford Cars in position on manifold

A Dollar's Worth of Mileage for Seventy-Five Cents

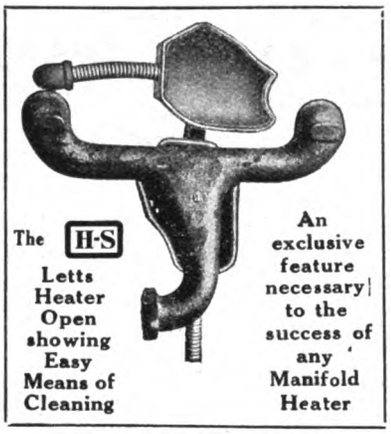
Yes, and often as high as 35 miles on one gallon of gas. Ask Ford owners in your district if they are getting that. Then show them how they can with our

H-S LETTS MANIFOLD HEATER

FOR FORD CARS

It's simply wonderful the letters of thanks we are getting from Ford owners. In every single case, more mileage, more power, greater motor comfort was derived than the guarantee called for.

The H-S Letts Manifold Heater is no untried theory. Two years tests on hundreds of Ford Cars under all conditions have proved its successful operation.



It is the application of a principle well known to automobile manufacturers. Simply takes the last vestige of moisture out of the gas. Heats the vapor in the intake manifold. Sends a pure, dry gas into the cylinders. Result—equal explosions in all four cylinders, 50% less carbon, an end of spark plug troubles, a cool, smooth running, non-skipping, non-stalling, quickly started engine.

Made so it can be cleaned.

Installed in thirty minutes.

PRICE - - $6.00

(Read these Extracts from Letters of Users.)

". . . On the eight hundred miles we used just 26 1-2 gallons of gasoline, which is a little better than 30 miles to the gallon. Before this heater was put on, the best I could get was 16 to 18 miles per gallon."

One-Third Less Gas

"Enclosed please find check for your Manifold Heater, with which I am well pleased. My engine runs cooler and I use one-third less gas."

Saved Enough for New Truck

"It is truly wonderful the results we are getting from our delivery cars. In our business we are compelled to figure to the smallest fraction and we are at present saving one and one-half gallons a day per car on three cars which saves us a $1.13 per day, or $352.56 per year. You can readily see that I am saving the price of a ***new Ford each year.***"

Cannot Say Too Much

"I have tried this heater in every way. My car runs smoother and I make hills on high I never could before. I would not think of selling this heater for any amount of money if I couldn't get another. I cannot say too much for it."

Gets 35 Miles per Gallon

"My car at present is running smoother than it has since we bought it four years ago. We are getting from 30 to 35 miles per gallon with the Letts Heater."

Wants 50 More

"Kindly rush 50 more heaters. We have installed 100 and without a single exception they exceed the guarantee that you give. They are the best Ford accessory on the market."

20% to 40% More Mileage Guaranteed

Jobbers—the H-S Letts Manifold Heater is backed by an extensive advertising campaign—and will be distributed through you. Write us at once for complete selling plan.

Dealers—We want you to have our new booklet "Mileage"—it tells all about the exclusive features of the H-S Letts Manifold. Write for it today.

HIGHEST QUALITY
TRADE H-S MARK
PROMPT SERVICE
This trademark guarantees to you quality in material and workmanship — perfect fitting parts.

HILL-SMITH METAL GOODS COMPANY

MANUFACTURERS OF MOTOR PARTS AND ACCESSORIES
REPAIR PARTS FOR THE FORD AND OVERLAND CARS
BOSTON, MASS.

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can this record-breaking Ford Electric Lighting System be sold for such a record-breaking low price.

Genolite System $29.85

Because it is manufactured with the same intensive efficiency and the same immense volume as the Ford Car itself.

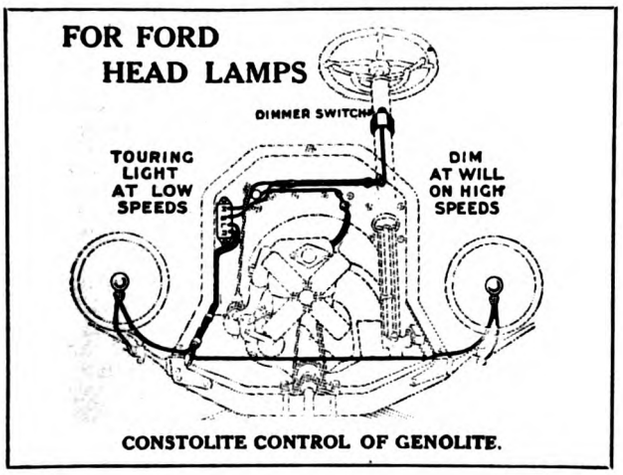
And Genolite, which now includes Constolite for headlight control, is guaranteed by a factory whose reputation for a quality product is just as secure as the great automobile industry of which it is a part. The ***Genolite*** system is:

A perfect—Electric Lighting System for Ford Cars from head lamp to tail lamp.

Dealers—You can sell to an ever increasing army of Ford owners in your territory an Electric Lighting system just as efficient and just the same in conventional units as that put in a $5000 car—And you can sell it for less than $30.00.

GENOLITE comprises a generator that makes the current—a storage battery to store and keep it ready for instant use—Electric Side and Tail Lamps, as good as the best—a "cut-out," Switch to turn lights on and off, brackets, wiring and all necessary attachments. GENOLITE can be attached in two hours, no machine work necessary and no removing of radiator, everything simple and complete.

Then there is CONSTOLITE, a device that's ahead of anything ever devised to control the headlights on Ford Cars. With a dimmer switch on the steering post to instantly dim the lights at high speeds and to create a touring light for low speeds that increases many times the present fluctuating light. All at the one price, **$29.85.**



CONSTOLITE CONTROL OF GENOLITE.

Dealers, *Think of the biggest selling accessories for 1916, then think of the accessory that will out-sell the biggest yet in 1917—That's Genolite backed by a great National Advertising Campaign. Wire or write immediately. Dept. G.*

VERSAL PRODUCTS FOR THE UNIVERSAL CAR
DETROIT STARTER COMPANY DETROIT U.S.A.

THE DETROIT STARTER CO.

DETROIT, U. S. A.

Our Reputation is Your Guarantee.

CANADIAN DISTRIBUTOR:
The Canadian Fairbanks Morse Co., Montreal, Canada.

Canadian Price Genolite $41.85

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20 cents a copy.

THE ACCESSORY -AND- GARAGE JOURNAL

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William H. Black, Treasurer.
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SAVE 50% ON PARTS

Wheels, Axles, Gears, Bearings, Cylinders, Pistons, Crankshafts, Camshafts, Crank Cases, Transmissions, Hubs, etc., for E. M. F. 30, Maxwells Q, F, K, G, Overland 38, 42, Reo 1910, Empire 20, Buicks 10, 17, 19, Oakland 1910, Cadillac 1909-12, Mitchell 1907-12, Flanders 20, Warren 30. Ask us about any part for any Standard Make or Orphan Car. Prompt service. Money refunded if not satisfied. AUTO PARTS CO., 4100 Olive St., St. Louis, Mo.

Sell INSYDE TYRES. Inner armor for auto tires. They eliminate 90 per cent of all punctures and blowouts and double tire mileage. Low cost. Liberal profits. Details free. American Accessories Co., Dept. J. G., Cincinnati, O.

How to Repair Scored Cylinders

By the new nickel and silver process, no heat required, same Pistons and Rings used, experience not necessary, complete outfit $10. Write quick. A big money making proposition. Address Wilkes-Barre Welding Co., Wilkes-Barre, Penn.

ANTI DRAFT SHIELD closes gap above Ford windshield. List price $1.50.
EORD REPAINTING OUTFIT, list price, $3.00.
RACING OR BUCKET SEATS, list price, $15.00.
Discounts to dealers.
American Accessories Co., Dept. J. G., Cincinnati, O.

ACCESSORY SALESMEN to sell as side line on a strictly commission basis, excepting on Pacific Coast and S. W., an unguaranteed line of automobile casings, inner tubes and reliners. The only line sold on a basis of actual manufacturing cost. An unusual price proposition. Address P. O. Box No. 67, Morrisville, Pa.

The best proof that we can add to your profits—your reputation for service—and increase your satisfied customers.
Axles, front and rear, from....$15 up
Continental Motor, 4 cyl., 45-53 H. P., with magneto, coil, clutch, transmission, for....$200
Krit Motor, 1915, unit power plant, at....$125
Perkins Motor, 4 cyl., 18 H. P....$60
Speedometers, Stewart....$9
Windshields, many types and sizes....$7.50 up
We have 2,000,000 other bargains. Write us for quotation and the Bargain Bulletin.
PURITAN MACHINE COMPANY,
All Parts for All Cars.
51 Tenth St., Detroit, Mich.

Big profit in handling our high-grade, guaranteed Red Tubes. Discount 30% from the "Fair List" price. 40% discount on new Non-Skid, Black Tread Clincher Tires, in sizes 30x3, 30x3½ and 34x4.
PHENIX AUTO SUPPLY CO.,
142 Commercial St., Worcester, Mass.

PATENT FOR SALE—Combined Electric Hand Warmer and Steering Wheel Cover. Fabric construction. Laces on. Very simple, neat, practical. Cheaply manufactured—good profits. BARNES, R. 4, Stanbridge East, Quebec.

FOREIGN REPRESENTATION—If you want active representation in British South Africa. Have office in Johannesburg. Full details. Box 8, Accessory and Garage Journal, Pawtucket, R. I.

WANTED—A first class battery man, who can maintain, repair and rebuild storage batteries for lighting and starting systems and handle this department for a good sized service station. Will make contract and pay best of wages to man who can make good. Address F. C., Box 101, Automobile Journal Publishing Co.

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WE MANUFACTURE AND DISTRIBUTE

J. H. FAW, Inc.,

Main Office 41 Warren Street New York City

Branch Atlanta, Ga.

American Standard Ignition Cables and Lighting Wires

Auto Crawlers

Electrical Lamp Convertors

Fawsco Ignition Assemblies

Red Seal Spark Plugs

WE REPRESENT

Commercial Fuse Co.
Auto Fuses.

Lennon Mfg. Co.
Light Protectors.

Culver-Stearns Mfg. Co.
Auto Elec. Lighting Specialties.

Fitzgerald Mfg. Co.
Gaskets, Horns, Terminals, Battery Connectors, Etc.

Oakes & Dow Co.
Sootless Spark Plugs.

Auto Equipment Co.
Eureka Valve Grinding Compound.

Walden Mfg. Co.
Tools & Wrenches.

Ideal Clamp Mfg. Co.
Hose Clamps.

Independent Lamp & Wire Co.
Tungsol Auto Bulbs.

FAWSCO FUSE Assortment

A complete stock for the jobber or dealer, and fuse equipment sufficient for any garage or repair shop

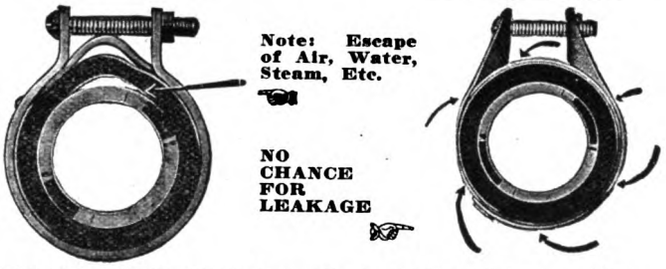
Economy in buying
Time saved

Exact size always on hand
Select the fuse wanted.

List prices—Assortment No. 1. 100 fuses $11.40
" " " No. 2. 200 " 21.60

The IDEAL HOSE CLAMP

The OLD WAY *The NEW WAY*



The Only Clamp That Closes Perfectly Round Over a Hose

A FEW SUPERIOR POINTS OF THE IDEAL CLAMPS ARE:—

They will not *Buckle* or cut the hose. They can be slipped over a pipe, no matter in what position the pipe may be. They will always form back to the original shape by simply tightening the screw.

The LENNON Light Protector

is a *patented* — flexible Brass Reflector, heavily plated—which throws *all* the light *on the road* and *Stops* the *Glare* prohibited by Law.

Made in two sizes to fit any head lamp

RETAIL PRICE PER PAIR, $1.00

WRITE FOR CATALOG AND TRADE PRICES

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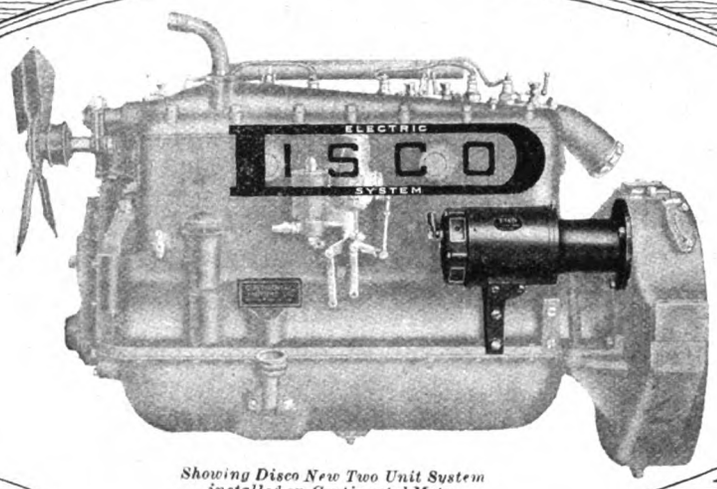


Showing Disco New Two Unit System installed on Continental Motor

Presenting a New Two Unit System

Comparative tests made in our own laboratories and by car manufacturers have proven this new two-unit system to have many marked advantages over even the finest and highest priced systems made today.

It is fitting that this latest improved system should have been produced by the Disco Company, the pioneer makers of starting and lighting systems in this country.

Over a decade of experience, of experimenting, testing and proving, have gone into it.

It draws less current, thus being easier on the batteries.

Its compact, well thought-out design cuts installation time nearly in half. This is of particular advantage on the Ford type, as it requires only a little over four hours installation time against about eight hours for the average make. It is the most accessible design yet produced. Loosening four bolts permits complete inspection and adjustments.

It is machined and constructed with a degree of accuracy never before used in starter construction and equaled only in the finest, highest priced motor car work. This accuracy is made possible by the new, specially built machines and equipment installed in our fine new plant in Detroit.

In short, the New Disco is a system you can install in a motor car and forget. It will do its work silently and efficiently as long as the car lasts **and without expensive repair shop assistance.**

The FORD TYPE

The New Disco Two-Unit System is made in a Ford Type that combines all the advantages mentioned and sells for $70.00. We will continue to make our single unit Ford system selling for $65.00.

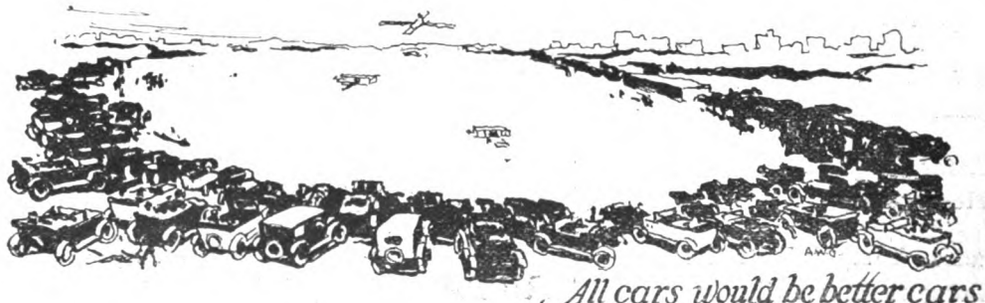
Deliveries on the New Two-Unit System will start Feb. 1st. Immediate deliveries can be made on the single unit system.

DEALERS

will find the Disco line an extremely profitable one this coming year. Write or investigate it at the shows.

Disco Electric Starter Corporation

Detroit



All cars would be better cars if Disco Eqipped

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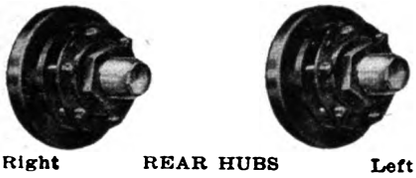
Note the Powerful Driving Lugs

WHEEL



Right REAR HUBS Left

Right FRONT HUBS Left

WRENCH

How Much Better to Carry an Extra Wheel Than Just a Spare Tire

Tire trouble delays are reduced to just 60 seconds —No more bothersome, mud-encrusted nuts to unloosen, no more prying off rust-tightened rims —Guard against mishap to a wrecked wheel as well as to a wrecked tire—This is now possible with

The Minute Demountable Wheel For Ford Cars

Complete Equipment as Shown

$30

What you get:

One wheel, interchangeable with any Ford wheel, four hubs and hub wrench and one extra flange.

Here is a time and labor saver as far ahead of the demountable rim as the demountable rim was ahead of the old clincher type. Eventually every Ford owner will carry an extra wheel instead of just an extra tire

Note These Features: ☞

The Advantages of MINUTE Demountable Wheels Are:

Tires changed in 60 seconds.
Tires changed with the removal of one nut only.
Tires changed without soiling hands with mud and dirt.
Tires changed without an effort—a child could do it.
Weight less than with demountable rim—and better balanced —coming on hub instead of on the rim.
Can replace a wrecked wheel just as quickly as a wrecked tire.

DEALERS: Get in touch with your jobber at once for full particulars of the **MINUTE** Demountable Wheel. If for any reason he has not had his allotment, write us direct for particulars.

JOBBERS: The **MINUTE** Demountable Wheel is the biggest selling proposition of the year. It will be sold through you. Get in touch with us quick for selling plans.

OWNERS: See your dealer for particulars. If unobtainable, write us.

HIGHEST QUALITY
TRADE H-S MARK
PROMPT SERVICE
This trademark guarantees to you quality in material and workmanship — perfect fitting parts.

HILL-SMITH METAL GOODS COMPANY

MANUFACTURERS OF MOTOR PARTS AND ACCESSORIES
REPAIR PARTS FOR THE FORD AND OVERLAND CARS
BOSTON, MASS.

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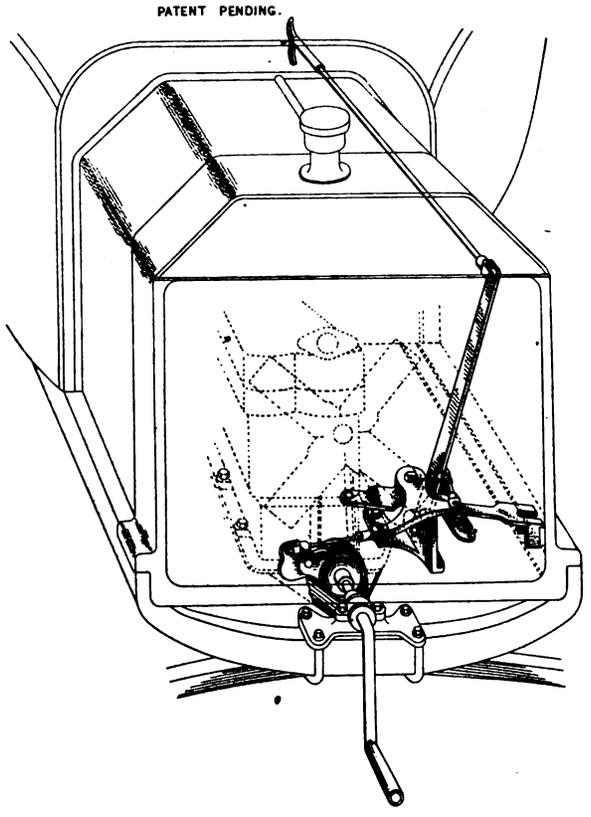
BARRETT MOTOR STARTER
FOR FORD CARS
A Starter that "Starts"

SIMPLE IN CONSTRUCTION.
NO TROUBLE TO INSTALL.

NOTHING TO BREAK.
EASY TO OPERATE.

BARRETT MOTOR STARTER
PATENT PENDING.



List Price $12.00

Liberal Discount to the Trade

A Few of the Many Distinct Features:

It cannot get out of order. It will last longer than the car.
No Pulleys, Cables or Chains to stretch, kink or break.
No holes to bore; simply attach to present Ford mechanism.

Starter completely out of sight.

Releases automatically in case of backfire.

Operated from the seat.

Jobbers and Dealers

The Barrett Starter is guaranteed to be 100% efficient. Ford owners buy at sight and the demand is already established. This equipment should be listed in your 1917 catalogue.

Direct leverage; easy pull.

No removal of crank.

Made to meet all shocks and strains.

A Starter that should be on every Ford Car for Safety, Convenience and Comfort. A time and trouble saver.

Sold by all Jobbers and Dealers, or Direct. ***For Detailed Information Write to Us.***

PIONEER SALES CORPORATION

(Distributors Barrett Motor Starter)

1777 Broadway **New York City**

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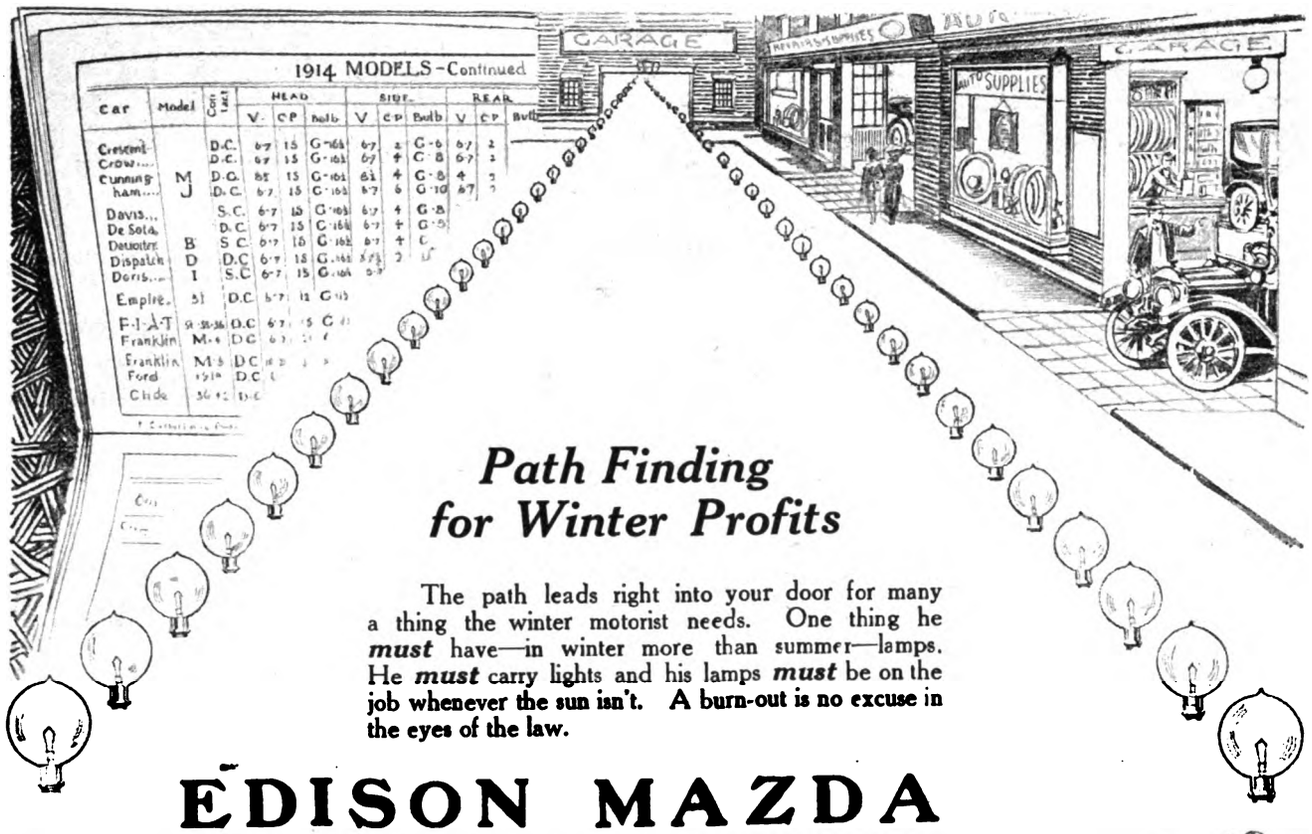


Path Finding for Winter Profits

The path leads right into your door for many a thing the winter motorist needs. One thing he ***must*** have—in winter more than summer—lamps. He ***must*** carry lights and his lamps ***must*** be on the job whenever the sun isn't. **A burn-out is no excuse in the eyes of the law.**

EDISON MAZDA

AUTOMOBILE LAMP ASSORTMENT

Just the thing for your counter—occupies little space, and from it, with the aid of our booklet, you can equip practically any car with the correct lamps for every socket. To help you sell six lamps at a time—spare lamps—we provide you with the convenient Auto Lamp Chests which you pack from your assortment stock.

Your whole investment in an EDISON MAZDA Automobile Assortment is hardly more than the price of a tire. You'll be surprised at the rapid turnover. You can renew your stock automatically.

Why let this path to winter profits lead to somebody else's door? Write today for agency plan.

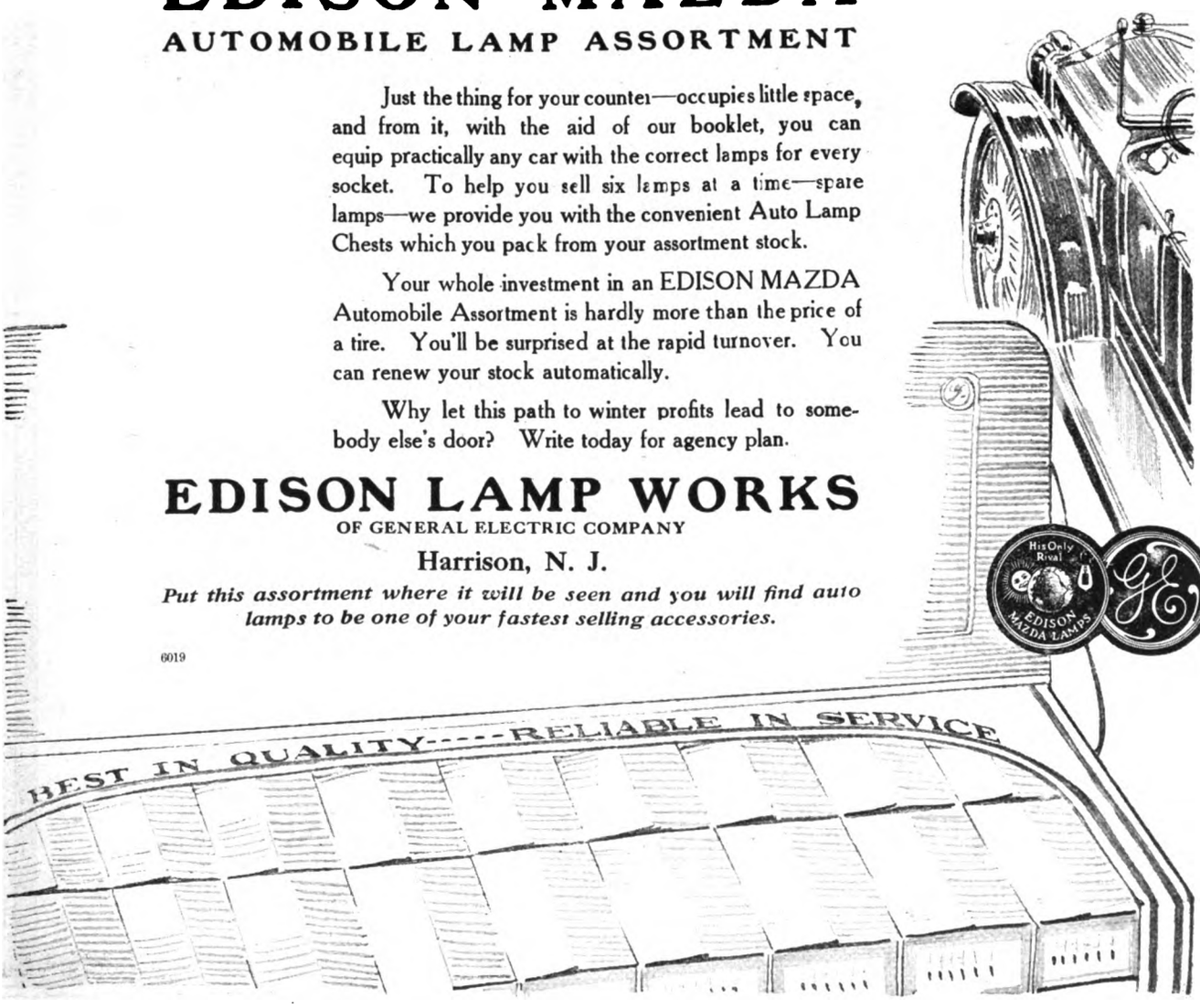
EDISON LAMP WORKS

OF GENERAL ELECTRIC COMPANY

Harrison, N. J.

Put this assortment where it will be seen and you will find auto lamps to be one of your fastest selling accessories.

6019



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BLUE RIBBON POLISH

Is Absolutely Free From Wax or Gum

It cannot retain dust and it cleans and restores the original finish. It revivifies the varnish or enamel and keeps it flexible and prevents it "checking" or becoming "dead" or dull.

Wax or gum will coat the body surfaces and cannot be removed. It will destroy the finish and the onlv restoration is renewal. Any practical painter will subscribe to this.

The original factory finish and gloss is restored and the body is cleaned and re-polished with Blue Ribbon Auto Body Gloss.

BLUE RIBBON POLISH

is not an experiment. It has qualities proven by service. There is an established demand for it and the cost to the dealer and jobber selling it is not more than is charged for inferior and unreliable polishes. There is a big profit because of the continuously increasing sales.

EIGHT BLUE RIBBON SPECIALTIES:

Blue Ribbon Cream Metal Polish
For any metal.

Blue Ribbon Black Enamel
For Lamps, Hoods, Radiators and metal parts.

Blue Ribbon Leak Proof Cement
A Permanent Radiator Cement.

Blue Ribbon Cold Cream Hand Soap
Contains no pumice or sand.

Blue Ribbon Auto Body Gloss
For Automobiles and Furniture.

Blue Ribbon Nickel Polish
For Nickel Parts and Trimmings.

Blue Ribbon Auto Top and Seat Dressing
A Waterproof Dressing that restores Tops and Seats.

Blue Ribbon Oil Soap
A pure Vegetable Oil Soap for any purpose.

BLUE RIBBON SPECIALTIES constitute a complete line, each one a "Leader." They are sold in sealed containers and in quantities to meet any need. They are trade-marked products and absolutely guaranteed.

Write today for catalogue and prices. Have you listed "Blue Ribbon" in your 1917 catalogue?

INTERNATIONAL METAL POLISH CO.

INDIANAPOLIS **INDIANA**

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AN agency for Hood Tires is a valuable asset to your business because—

The Hood Tire is of such supreme quality that every sale means repeat orders and an increasing patronage through recommendation.

Our national advertising in newspapers, the *Saturday Evening Post* and other widely read magazines will send the right kind of buyers to where the Hood sign is prominently displayed. Write us regarding our exclusive agency proposition.

THIS IS THE SIGN OF A HOOD DEALER

"Quality is Economy"

Hood Tire Co., Inc., Watertown, Mass.

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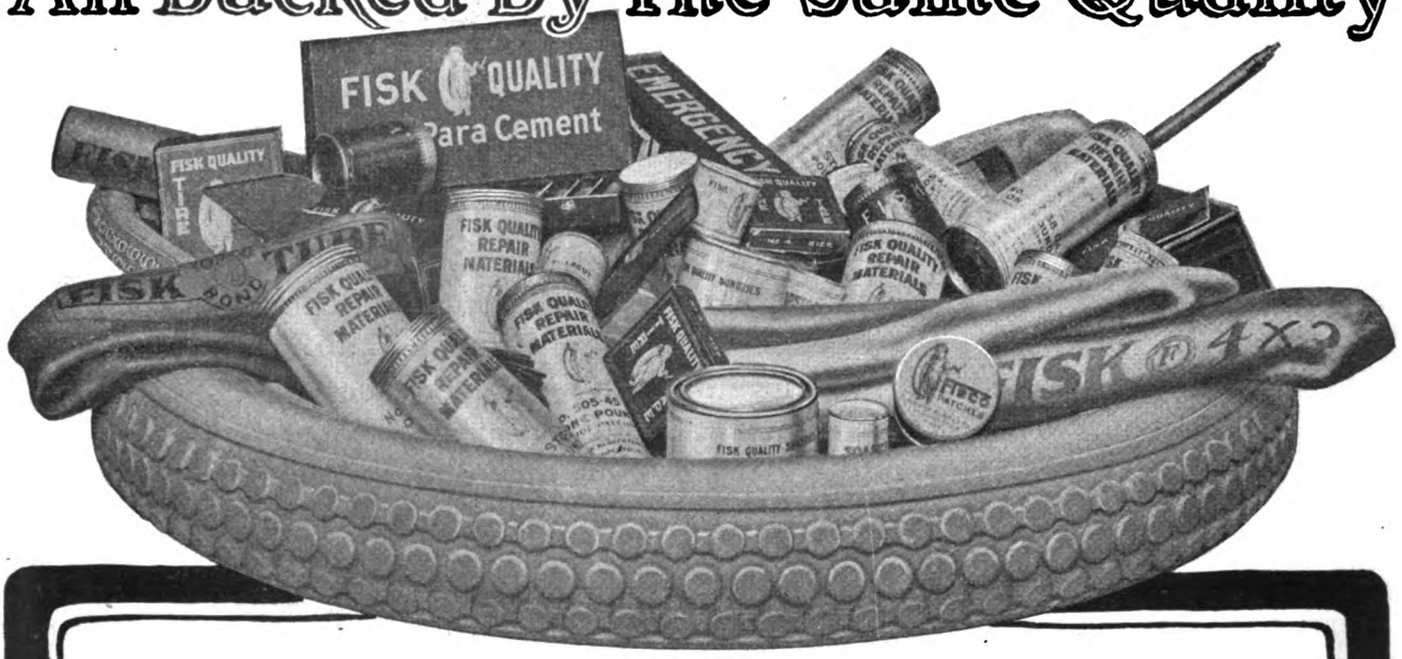
All Backed By The Same Quality



The Advantage in Selling Whole "Family" of Fisk Products

It is easy to develop a substantial and exceedingly profitable business in Fisk Sundries by selling them to your regular Fisk Tire customers. The man who buys a Fisk Tire knows the quality of Fisk Products and you don't have to use any of your time to sell Fisk Sundries. Many of our dealers have become such Fisk enthusiasts that they handle only Fisk Sundries for all their trade—and it is astonishing, even to us, to note how their business increases each month, and how the size of their orders has grown.

Included in the Fisk Family of Tire Sundries are

Gold Bond Tubes	Emergency Patches	Cementless Patches
Pure Para Tubes	Fabric Patches	Moulded Patches
Gold Bond Motorcycle Tubes	Pure Para Cement	Vulcanizing Cement
Grey Motorcycle Tubes	Fisk Tire Tape	Fisk Fillicut
Fisk Quracut	Tube Splices	Fabrics
Uncured Stocks	Air Hose	Valve Pads
Air Bags	Bead Cavity Fillers	Bead Strips
Bead Mould Fillers		Fisk Soapstone

Write Dept. A for further information about Fisk Products

THE FISK RUBBER COMPANY

of N. Y.

Chicopee Falls, Mass.

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VOL VI. PAWTUCKET, R. I., DECEMBER 1916. No. 8

Automobile Making a Billion Dollar Industry

Retail Sales of Pleasure and Business Cars At Opening of the New York Show Pass the Billion Dollar Mark for 1916, According to Alfred Reeves

ON THE eve of the opening of the New York Automobile Show in Grand Central Palace, the 17th annual event, Alfred Reeves, general manager of the N. A. C. C., comes forward with the declaration that automobile manufacture reached its pinnacle in 1916 with retail sales of pleasure and business cars in excess of $1,000,000,000. He further declares that there is no indication of a decrease in the demand and that prospects for 1917 show that the new year will surpass the record of 1916.

Mr. Reeves' figures show that sales in 1916 were in excess of 1,600,000 passenger and freight carrying vehicles, at an average sales price for all classes of $672. The average for passenger vehicles was $605 and for trucks $1809. These vehicles were made by more than 400 companies and sold by 30,000 dealers throughout the United States and foreign countries. Exports reached during 1916 a grand total of $96,000,000 at wholesale, not including the tremendous business done in parts and accessories.

"Production is certain to go on at a stronger rate," said Mr. Reeves in an interview, "and while standardized to a marked degree in many parts, there will always be a great variety of designs in motor chassis and bodies and a large number of companies supplying them. It is fair to assume, however, that with the keen competition only standard products of established and well managed companies can be expected to survive in this business, now so firmly established and so generally recognized as one of the giants of industrial America."

Preliminary reports from Grand Central Palace bear out the general expectation that this year's show is to be the greatest the world has ever seen. It is confidently expected that approximately 400,000 people will attend, some dealers' organizations coming from distant points in the West in special de luxe trains. Last year there were about 325,000 paid admissions.

More than 100 makers of pleasure cars are scheduled to exhibit a total of about 500 models and chassis, while in the accessory division there will be more than 225 exhibitors, not including those makers who, unable to obtain space in the Palace, will conduct their own little shows in their New York headquarters.

Only pleasure cars and accessories will be shown at this year's exhibition. The car models will be displayed on the main floor of Grand Central Palace.

Where the New Show Will Be Held and the Men Behind It—At Top Left, Col. George Pope, Chairman of the Show Committee; at Right, Wilfred C. Leland, Vice President N. A. C. C.; at Bottom Left, Alfred Reeves, General Manager N. A. C. C., and at Right, S. A. Miles, Manager of New York and Chicago Shows.

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Where Exhibitors Are Located

N.A.A.A.J. Members Exhibiting at New York Can Be Found During Show Week at Addresses Given

Representative.	Headquarters.
Adamson Mfg. Co.	
J. C. Milsom	McAlpin
C. F. Adamson	McAlpin
G. A. Steinhauser	McAlpin
Asbestos Rubber Mfg. Co.	
L. J. Miley	McAlpin
J. A. Whitney	McAlpin
Atwater Kent Mfg. Works.	
H. E. Rice	Biltmore
H. R. Carlisle	Biltmore
Auto Parts Mfg. Co.	
W. Schwab	McAlpin
F. G. Bremer	McAlpin
C. W. Beckler	Astor
Auto Parts Co.	
T. F. Wilson	Astor
Benford Mfg. Co.	
E. M. Benford	Mt. Vernon
D. Levin	Mt. Vernon
Wm. Meyer	Mt. Vernon
Brown Spring Oiler Co.	
A. J. Picard	At Show
R. A. Picard	At Show
Brunner Mfg. Co.	
G. L. Brunner	Astor
D. G. Caywood	Astor
A. B. Jenkins	Astor
Carter Carburetor Co.	
H. H. Weed	Manhattan
H. S. Staton	Manhattan
L. D. Young	Manhattan
Caskey Dupree Mfg. Co.	
S. F. Dupree, Jr.	Astor
Columbus Varnish Co.	
C. M. Simpson	Astor
S. W. Hanna	Astor
Corcoran Victor Co.	
W. W. Earley	Knickerbocker
T. H. Carruthers	Knickerbocker
W. J. Wilson	Knickerbocker
Curtis Pneumatic Machinery Co.	
A. E. Hoermann	30 Church St.
C. E. Doud	30 Church St.
C. C. Main	30 Church St.
Double Fabric Tire Co.	
R. B. Crane	Astor
C. L. Stebbins	Astor
A. L. Murray	Astor
Durkee Atwood Co.	
A. F. Durkee	37 Murray St.
E. A. Laboratories.	
J. Auflero	.....
H. Eckhouse	.....
Mr. Eisele	.....
E. Edelmann & Co.	
E. Edelmann	Knickerbocker
Edmunds & Jones.	
G. E. Edmunds	Astor
L. M. Pyle	Astor
F. E. Castle	Astor
Endurance Tire and Rubber Co.	
J. H. Cooper	Astor
A. W. Shattuck	1789 Broadway
Federal Rubber Co.	
G. H. Hamilton	Astor
H. A. Githens	Astor
Findeisen & Kropf.	
H. L. Dickey	Astor
A. E. Barlow	Astor
Firestone Tire and Rubber Co.	
C. H. Gerhold	Astor
H. E. Hass	Astor
Fitzgerald Mfg. Co.	
J. P. Hutchison	At Show
The Fulton Co.	
S. A. Fulton	McAlpin
Gemco Mfg. Co.	
G. F. Discher	Astor
M. A. Dewey	Astor
John Craig	Astor
General Asbestos and Rubber Co.	
C. B. Jenkins, Jr.	Biltmore
General Tire and Rubber Co.	
B. J. Goldburg	1731 Broadway
A. L. Martin	1731 Broadway
W. O'Neil	1731 Broadway
Globe Machine and Stamping Co.	
R. B. Dangeleisen	Astor
I. F. Goodrich	Astor
W. F. Edwards	Astor
Emil Grossman Mfg. Co.	
E. Grossman	At Show
W. M. Fernes	At Show
A. E. Rosenberg	At Show
H. G. Welder	At Show
Gray & Davis.	
Wm. Gray	Waldorf
R. W. Harris	Waldorf
W. W. Burke	Waldorf
L. P. Halladay & Co.	
L. P. Halladay	Astor
E. L. Thompson	Astor
W. J. Heinicke	Astor
E. V. Hartford Co.	
E. R. Waterman	At Show
Hayes Mfg. Co.	
E. D. Emmons	Biltmore
John O. Heinze Co.	
H. C. Anderton	Astor
Wm. Pfium	Astor
R. B. Miller	Astor
G. C. Slager	Astor
Judd & Leland Mfg. Co.	
M. L. Harlem	Empire
K. W. Ignition Co.	
C. Albracht	.....
R. J. Eiserman	.....
R. H. Bechtol	.....
Kellogg Mfg. Co.	
J. F. Weller	Yale Club
M. R. Anstice	Yale Club
E. J. Edwards	Yale Club
Keyless Auto Clock Co.	
O. A. Perry	246 W. 59th St.
F. Phinney	246 W. 59th St.
W. J. Wells	246 W. 59th St.
Klaxon Co.	
W. P. Coghlan	Manhattan
D. A. MacConnell	Manhattan
Livingston Radiator Co.	
E. G. Brochman	205 W. 75th St.
B. R. McKinney	205 W. 75th St.
McQuay-Norris Mfg. Co.	
C. L. Derrickson	205 W. 75th St.
L. A. Safford	205 W. 75th St.
Marvel Accessories Co.	
E. J. Thalman	Astor
J. E. Clare	Astor
Wm. Trosler	Astor
O. S. Kenzy	Astor
Mayo Skinner Mfg. Co.	
F. Mayo	Astor
H. G. Weakley	Astor
Metal Specialties Mfg. Co.	
N. H. Oliver	McAlpin
Midland Supply Co.	
W. J. Sandford	Astor
M. Hensing	Astor
J. R. Lane	Astor
Frank Mossberg Co.	
A. H. Harrop	Astor
H. E. Ring	Astor
J. W. Morrey	Astor
A. Mosler Co.	
Wm. Leibling	Cumberland
J. W. Fischer	Cumberland
C. H. Wachtel	Cumberland
Moto Meter Co.	
H. H. Boyce	15 Wilbur Ave., L.I.C.
C. L. Monson	15 Wilbur Ave., L.I.C.
G. H. Townsend	15 Wilbur Ave., L.I.C.
New Era Spring and Specialty Co.	
S. Daniels	Park Ave.
W. B. Canis	Park Ave.
H. M. Stewart	Park Ave.
Northwestern Chemical Co.	
F. R. Hall	Astor
G. S. Scott	Astor
V. V. Casey	Astor
B. H. Barker	Astor
The Oakes Co.	
W. H. Oakes	Biltmore
F. E. Glass	Biltmore
L. Schwitzer	Biltmore
Perkins-Campbell Co.	
C. W. Stricker	Manhattan
J. P. Mills	Manhattan
E. H. Breed	Manhattan
Reflex Ignition Co.	
W. R. Vick	Prince George
C. A. Shaler Co.	
R. B. Dunlap	McAlpin
R. E. Malone	McAlpin
Silvex Co.	
W. N. Davidson	Astor
E. H. Schwab	Astor
C. C. Heffley	Astor
B. Wentworth	Astor
Sparks Withington Co.	
W. Sparks	Astor
C. Falkenberg	Astor
F. Rodgers	Astor
Splitdorf Electric Co.	
O. J. Rohde	3 W. 61st St.
D. P. Hersey	3 W. 61st St.
Sunderland Mfg. Co.	
W. J. Sunderland	Astor
Tuthill Spring Co.	
D. S. Campbell	Vanderbilt
Voorhees Rubber Co.	
K. D. Spencer	McAlpin
R. N. Pierson	McAlpin
R. L. Harmon	McAlpin
Walker Mfg. Co.	
W. T. Walker	Astor
A. W. Shattuck	Astor
H. E. Witherspoon	Astor
Walden Mfg. Co.	
W. S. Bellows	41 Warren St.
J. H. Faw	41 Warren St.
Warner-Lens Co.	
E. C. Patterson	Biltmore
Weaver Mfg. Co.	
G. E. Weaver	McAlpin
R. Waldt	McAlpin
Wheeler-Shebler Carburetor Co.	
G. T. Briggs	Astor
J. B. Funk	Astor
White Star Refining Co.	
J. A. Cannon	Woodstock
F. Ryan	Woodstock
Indiana Lamp Co.	
L. P. Zinke	Astor
Shurnuff Mfg. Co.	
F. W. Kohl	Astor
Romort Mfg. Co.	
W. H. Zinke	Astor

JOBBERS

Representative.	Headquarters.
Beck & Corbitt Iron Store Co.	
G. Niekamp	.....
H. F. Brownell Co.	
H. F. Brownell	Astor
Cameron & Barclay Co.	
J. T. Jenkins	Biltmore
Canadian Fairbanks Morse Co., Ltd.	
A. J. Hopkins	McAlpin
J. W. Paton	McAlpin
Chanslor & Lyon.	
W. A. Avery	Astor
T. A. Walsh	Astor
I. J. Cooper Rubber Co.	
I. J. Cooper	Waldorf
H. H. Brenner	Waldorf
B. T. Crump Co.	
P. A. Seaton	Astor
H. M. Baker	Astor
Interstate Electric Co.	
P. Stern	.....
F. B. Stern	.....
Lansing Hardware Co.	
D. T. Lansing	Astor
McCoy Motor Supply Co.	
H. L. Anger	Astor
Miller & Sons, Ltd.	
J. E. Miller	Martinique
A. McIntosh	Martinique
Miller Bros. Auto & Supply House.	
C. E. Miller	Biltmore
W. L. Lockwood	Biltmore
Ozburn Automobile Supply House.	
N. F. Ozburn	Astor
E. H. Baughman	Astor
A. J. Picard Co.	
A. J. Picard	1721 Broadway
R. A. Picard	1721 Broadway
Union Supply Co.	
F. W. Grubb	Astor
John Van Benschoten Co.	
J. C. Lucas	Chalmers Booth
J. VanBenschoten	Chalmers Booth
Wm. Warnock Co.	
Wm. Warnock	.....
E. K. Edgar	Astor
Weinstock-Nichols Co.	
R. Weinstock	Astor
J. H. Dielman	Astor

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Reo Has Assets Of $7,000,000.

Combined Car and Truck Companies Report Earnings of More Than $4,000,000 Net.

The Reo Motor Car Company and the Reo Motor Truck Company report net earnings of $4,031,070.26 for the year ending Aug. 31, 1916.

The annual financial statement, under which the operations of both companies are consolidated, shows current assets of $7,610,501.11, including a surplus of $3,849,828.20. On the corresponding date in 1915 the company's assets were $4,833,655.75.

The Reo Motor Car Company through purchase of all of the stock of the Reo Motor Truck Company is now the sole operating company and the following balance sheet is a consolidation of the returns of both companies:

Assets.

Current	$7,610,501.11
Capital assets	4,277,674.06
Deferred charges	16,345.31
Interest in other corporations	73,787.50

Liabilities.

Current	$1,191,229.78
Stock outstanding	6,937,250.00
Surplus	3,849,828.20

CHANDLER MOTOR CAR EXTRA DIVIDENDS.

The regular quarterly dividend of $2 and an extra dividend of $1 a share has been declared by the Chandler Motor Car Company, payable Jan. 2 to shareholders of record Dec. 18.

At the conclusion of the last directors meeting, F. C. Chandler, president of the company, stated that the earnings for the current calendar year, with those for December, as estimated, would be approximately $1,715,000, or the equivalent of $24.50 per share on the $7,000,000 capital stock outstanding. These earnings would allow a surplus of over $1,000,000 after the payment of 10 per cent. dividends which have been declared since the first of the year.

PAIGE-DETROIT PAYS 170 PER CENT. IN 1916.

The stockholders of the Paige-Detroit Motor Company have received 170 per cent. dividends on their shares during the present year. The net earnings of the company for the current period will run between $1,300,000 and $1,400,000 on a capitalization of $1,500,000, or at the rate of 90 per cent. The total cash dividends will amount to 60 per cent. for the year and two stock dividends of 80 per cent. and 30 per cent. respectively have been declared, making the total 170 per cent. The current assets aggregate $2,000,000, including $1,057,000 in cash and $47,000 in Detroit city bonds. The liabilities are approximately $270,000.

At a special meeting of the stockholders of the company held on Nov. 21, it was voted to increase the authorized capital stock from $2,000,000 to $3,500,000 by the addition of $1,500,000 cumulative preferred stock.

REGISTRATIONS INCREASE IN MASSACHUSETTS.

The figures issued by the Highway Commission of Massachusetts for the 11 months ending Nov. 30, show a big increase in the registration of motor vehicles of all classes. The following table gives this year's figures as compared with those for the corresponding period last year:

	1916	1915
Total	134,917	102,633
Pleasure cars.	116,723	90,673
Commercial..	18,194	11,960
Motorcycles.	10,746	9,520
Manufacturers and dealers.	1,976	1,742
Operators....	170,700	133,935
Total fees....	$1,564,353.81	$1,205,420.19

Goodyear Earns $7,000,000 Net.

Gross Business for Fiscal Year Was 80 Per Cent. Greater Than During Last Year.

The financial report made at the annual meeting of the Goodyear Tire and Rubber Company, Akron, O., showed that the past fiscal year was the most prosperous in the history of the concern.

There was an increase in the gross business from $36,000,000 to $63,000,000, at the rate of 80 per cent., and the net earnings jumped from $5,000,000 to $7,000,000.

All of the directors were re-elected, as follows: F. A. Seiberling, C. W. Seiberling, G. M. Stadelman, F. H. Adams, F. W. Litchfield, H. B. Manton and J. P. Loomis. The old board of officers was also re-elected, as follows: F. A. Seiberling, president; C. W. Seiberling, vice president; G. M. Stadelman, vice president and sales manager; P. W. Litchfield, vice president and factory manager; A. F. Osterloh, secretary; F. H. Adams, treasurer; W. E. Palmer, assistant secretary and assistant treasurer; H. J. Blackburn, second assistant treasurer.

PREST-O-LITE COMPANY AWARDED DAMAGES.

The United States District Court for the District of New Jersey has awarded the Prest-O-Lite Company $3541.45 damages in that company's suit against Camille Bournonville and Ida Bournonville of Newark, N. J. This judgment is the largest so far won by the Prest-O-Lite Company in the litigation against refillers and dealers.

Wisconsin Garage Owners Meet.

Four Branches in Milwaukee Were Represented at Meeting and National Members Were Present.

At a meeting of the Wiconsin Garage Owners' Association, held in Milwaukee, which was the largest in the history of the organization, legislation for the protection of the garage interests in Madison, Wis., were considered and other matters of interest to the garage business of Milwaukee and the state came up for general discussion.

Members of the four branches in Milwaukee were present and also members of the national association. Secretary C. M. Carr of the American Association of Garage Owners was present and he announced the election of E. A. De Laurelle, president of the Wisconsin association, as president of the national association.

President De Laurelle, who was present, presided and after a brief address called upon the following for remarks: E. A. Swendsen of Swendsen's Garage, W. H. Ppenner of the Riverside Garage, J. H. Thor of the North Side Auto Company, Stanley Jack of Jack's Garage and Mr. Koenig of the Auto Parts Machinery Company. The speakers reported on the progress and development of the work of the organization in the several divisions in the city.

Attorney Nathan M. Stein, counsel for the association, discussed the present lien laws of Wisconsin and outlined the changes thought necessary to bring them up to the highest protective standard. The president reviewed the situation in the course of his remarks, including a mention of the standardization of prices, propaganda to prevent profitless work and overcharges, "safety first" and co-operation among garage men to obtain certain classes of supplies on a basis that saves money for both garagemen and car owners.

Secretary Carr reported for the national organization and complimented the state association on the progress and work it had accomplished. He reported that the national association had gained 11,000 members during the past year and predicted that a better record would be made under President De Laurelle's administration.

A number of applications for membership from garage proprietors in Milwaukee were favorably acted upon and it was voted to recommend an increase in the entrance fee.

HERSCHELL-SPILLMAN TO INCREASE CAPITAL.

The capital of the Herschell-Spillman Company, North Tonawanda, N. Y., will be increased from $250,000 to $750,000. The enormous growth of the concern's business since the first of the year has made necessary an expansion in equipment and facilities to increase the output.

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Pontiac Looms As Auto Center.

Establishment of Motor Truck, Pleasure Car and Parts Plant Brings Big Boom to City.

Pontiac, Mich., is one of the most rapidly growing cities in the great automobile state and the coming 12 months will undoubtedly prove the banner year in its annals. The boom in Pontiac is the direct result of the establishment of many new automobile, truck and parts manufacturers in that city. At a banquet recently held there nine concerns that recently commenced operations within the city were represented among the guests, and the statement was made that the firms in the automobile industry alone should bring over $50,000,000 worth of business in the ensuing 12 months.

Among the speakers at the banquet were: R. F. Monroe, president of the Monroe Motor Company; F. G. Clark of the Columbia Truck and Trailer Company; R. A. Palmer, president of the Olympian Motors Company, and T. H. McDearmon of the Oakland-Northway Company.

The following table gives the figures on which the estimate of $50,000,000 was based:

Company	Employees	Weekly Pay Roll	Est. Bus.
Oakland-Northway Co.	1250	$75,000	$45,000,000
Olympian Mfg. Co.	300	6,000	2,000,000
Monroe Motor Co.	500	9,000	4,000,000
Am. Forging & Socket Co.	75	1,400	430,000
Michigan Drop Forge Co.	97	2,225	388,000
Columbia Truck & Trailer Co.	50	1,500	4,000,000
Markley Handle Co.	21	400	50,000
Vanaukem Blower Co.	25	500	97,500

These figures are approximate estimates based on the outlook as indicated by orders in hand and in prospect.

ANNUAL CONFERENCE OF STUDEBAKER ORGANIZATION.

The annual conference of officials, branch managers, dealers and others connected with the Studebaker organization was held recently in South Bend, Ind., and at the factory in Detroit. There were over 230 present, including men from all over the country.

The conference was opened in the administration building at South Bend, with an address of welcome by F. S. Fish, chairman of the board. President A. R. Erskine gave a brief history of the corporation's activities during the past year and J. M. Studebaker spoke on "Sixty-four Years of Business Administration."

In the course of his remarks on the sales policy of the company for 1917, L. J. Olier said that the business of the company for the past year was the largest in its history and that the prospects were that a new record would be established in the coming year.

At the Detroit meeting addresses were made by R. T. Hodgkins, treasurer; H. T. Myers, commercial car manager, and G. L. Willman, assistant sales manager and advertising manager.

CLEVELAND TO HAVE FIRST ACCESSORY SHOW.

Probably the first exclusive motor car accessory show ever held in this country or elsewhere will be opened during the first week of January at the Dreamland Auditorium in Cleveland, O.

The Auto Show Accessory Company is conducting the show and W. B. Davis of the M. & M. Company, 501 High street, Cleveland, O., is handling the space, which is divided into three classes, grades A, B and C. Spaces will be allotted in the order of receipt of applications. The exhibition has been approved by Commissioner William M. Webster of

One of the Several Posters Being Utilized by the Show Committee of the Cleveland Accessory Exhibition.

the N. A. A. A. J., and it is understood that a number of manufacturers have given it their indorsement.

All the space will be devoted to the display of accessories and no cars will be shown. This idea is the result of the belief that has been quite general among both manufacturers of accessories and jobbers that their lines when exhibited alongside of hundreds of cars did not get a fair share of the attention or that the proper time would be devoted to their inspection to secure the interests of purchasers.

WILL MAKE CONTRACTS FOR FIVE YEARS.

The Schoeneck Company of Harvey, Ill., manufacturer of the Geneva car, will make contracts with dealers on a basis of five years, according to an announcement made by Forrest J. Alvin, the president.

Knickerbocker Reorganization.

Maker of Motor Trucks Has Been Refinanced to Provide Facilities for Large Expansion.

The Knickerbocker Motor Truck Manufacturing Company of New York has been taken over by the Knickerbocker Motors, Inc., of that city, which was recently organized with a capital of $500,000 to absorb the first named company and manufacture motor trucks on a larger scale. The new concern will occupy the same plant at 151st street and River avenue in the Bronx.

The production schedule for the coming year calls for 500 chassis and the line will include a 2½-ton truck, a 5½-ton truck and a three-ton tractor.

The officers of the company are: H. G. Streat, president of the Streat Coal Company, and founder of the Knickerbocker Motor Truck Manufacturing Company, president; A. C. Brady, vice president and sales manager; H. G. Streat, Jr., treasurer; W. C. Guilder, production manager. Mr. Guilder was formerly production manager of the Kelly-Springfield Motor Truck Company and was designer of the first Garford trucks and Mack trucks. He was also with the Timken-Detroit Axle Company as production expert.

The directorate is composed of H. G. Streat, Clarence A. Ludlum, Charles H. Class, W. H. Bonynge and Grove D. Curtis. According to a statement made by W. A. Lewis and J. B. Linn, who managed the underwriting for the company, that of the $500,000 capital, all of which is common stock of a par value of $10, $250,000 will be placed on the market to be subscribed for, the acceptance of the subscriptions being contingent upon the whole issue being taken and paid for.

WINTON COMPANY WILL CONTINUE SAME MODELS.

The Winton Company, Cleveland, O., will continue its present models, the Winton 33 at $2485, and the model 48 at $3500.

"The only change we contemplate," says General Manager Churchill, "is to increase the price of either or both models without notice, and we may be forced to announce an increase at any hour. Yearly models died as a natural consequence of perfected manufacture. I mean that our cars are made to endure, not to be discarded after one year's use. We want our buyers to get plus value, and our system keeps Winton Six cars in esteem, irrespective of their age."

The Chicago Automobile Trade Association will hold a used car show at the Chicago Coliseum during the week of May 8-14 next year. The exhibitors will draw for space, which will be sold at 40 cents a square foot.

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Hydraulic Steel May Be Merged.

Standard Oil Interests Are Said to Be Concerned in Reorganization of Company.

A plan is being considered for the consolidation of the Hydraulic Pressed Steel Company, Cleveland, O., makers of pressed steel wheels, frames and forgings, with another concern, the two companies to be owned and controlled by a new corporation with $10,000,000 capital. It is understood that the Standard Oil interests are identified with the reorganization, but the old management of the company will be retained and the same product will be manufactured, only on an increased scale.

The Hydraulic Pressed Steel Company was organized 10 years ago and annually does a business of about $7,000,000. The holders of the stock, it is understood, will receive $108 cash for each share and $162 in par value of the stock of the new concern, under the plan for refinancing.

PROPOSE BIG WAREHOUSE FOR BOSTON DEALERS.

The automobile dealers of Boston are seriously considering the erection of a large warehouse, to be located near one of the railroad terminals and not far distant from the district where the majority of the dealers' stores are now situated.

Such a warehouse would not only relieve the present congestion in many of the sales rooms and service stations, but would also effect a considerable saving in demurrage charges. Incidentally, it would release many freight cars that are so badly needed in the automobile industry to move the product.

$14,000,000 CONTRACT FOR STUDEBAKER CARS.

The largest single contract ever given for automobiles was recently placed with the Studebaker Corporation. It called for $14,000,000 worth of cars. The Studebaker Sales Company of Ohio, which was formed this fall by the consolidation of the Blevens Auto Sales Company of Toledo and the A. R. Davis Motor Company of Cleveland, originally placed a contract for $12,000,000 worth of Studebaker cars. When the Aaron De Roy Motor Car Company, distributors of Studebaker cars for Pittsburg and western Pennsylvania, was recently merged with the Studebaker Sales Company, the contract was raised to $14,000,000.

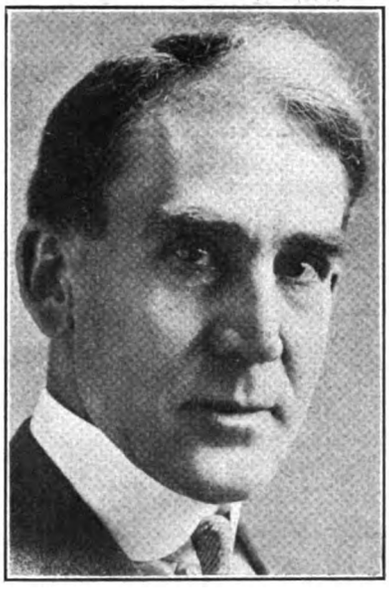
SUGGESTS LICENSE FOR AUTOMOBILE MECHANICS.

Members of the American Association of Garage Owners have made the suggestion to the officials that a movement should be started for a state license system for garage mechanics, contending that the public welfare demands such regulation equally as much as it does in the plumbing, barbering or other trades.

It is claimed that much damage has not only been done to cars, but that many owners have been made suspicious of the garage trade in general as the result of some tinkering mechanic with slipshod methods, who has made a poor job of his work.

SHORTAGE OF CARS IS BECOMING SERIOUS.

While the railroads are doing their utmost to relieve the serious shortage of freight cars, the situation promises to become very acute unless radical steps are taken to keep all the rolling stock moving. To accomplish this, shippers and receivers of freight have been notified that freight left on cars for 10 days will be summarily removed by the railroads and the goods stored at the shipper's or consignee's risk.



C. K. Fankhauser, a Leading New York City Financier, Who Predicts Great Future for Industry.

BIG EXHIBITION AT BROOKLYN AUTO SHOW.

The plans for the show to be held by the Brooklyn Motor Vehicle Dealers' Association in the Twenty-third Regiment Armory, Brooklyn, N. Y., Feb. 24 to March 3, indicate that the exhibition of cars will be more extensive than at any of the five preceding shows in that city.

There is more floor space in the armory than in Madison Square Garden, and applications to date indicate that every square foot will be occupied by cars and trucks. It is planned to give over all this space to car exhibits and provide room for the accessory display elsewhere.

Space will be alloted at the Motor Club, 1255 Bedford avenue, Brooklyn, N. Y., at 8 p. m. on Dec. 18.

Rumors of Another Huge Expansion

C. K. Fankhauser of New York Is Said to Be Behind Another Big Business Deal.

It is being rumored in financial circles in New York City that another big industrial expansion is under way. The controlling power behind the plan is understood to be C. K. Fankhauser of New York City, the financier, who has organized several important industrial developments during the last two years. The names of the companies concerned have not yet been made public.

Mr. Fankhauser has become a prominent factor in the motor vehicle and parts industry through the expansion of the A. O. Smith Company of Milwaukee, which before the reorganization was already known to be one of the largest pressed steel, drop forging foundries in the country. It is said that the earnings of the Smith company will exceed $2,000,000 this year.

To develop the Smith company, Mr. Fankhauser formed a pool of powerful banking houses, the pool including White, Weld & Co. and W. P. Bonbright, both of New York City, and Elston & Co. of Chicago. The increased stock issue of $3,000,000 preferred seven per cent. and 100,000 shares of no par value (which it is predicted will ultimately sell above $100 per share, or equal to $10,000,000 gross) was over sold on the market within 36 hours after the announcement.

When interviewed at his office at 450 Fourth avenue, New York, Mr. Fankhauser said: "I am a firm believer in trade papers and the important part they are taking in the development of the automobile industry. The next few years will witness great prosperity throughout the trade. We must keep our plants and our capital in a condition whereby we can take full advantage of the rapidly increasing trade.

"The talk about the industry being at its high mark is foolhardy. We have only just begun. The tractor and truck business is developing a new era which will force progressive manufacturers to double and triple their plants. This is to be a permanent business. Moreover, the pleasure car trade has not yet reached 50 per cent. of its possibilities. Experts agree that the point of saturation is not below 5,000,000 cars running (in the $1200 and over class); there are now less than 2,500,000. There is still great room for growth. The industry has only just begun."

DISCO STARTER WILL ESTABLISH BRANCHES.

A chain of branches will be established in the larger cities by the Disco Starter Company of Detroit to furnish owners of cars using that equipment with better service. Branches will be first located in New York City and Chicago and later in other large cities.

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Motor Car, Engine and Garage Heaters.

Stimulate your Winter Business by Drawing Your Customers' Attention to the Advantages of Having Means of Heating Their Cars and Garages.

THE "Winter Special" story in the last issue on the subject of convertible tops as winter business boosters received unstinted commendation from a large number of readers, several of whom have already acted upon the suggestion, many others advising they intended to as soon as conditions would allow.

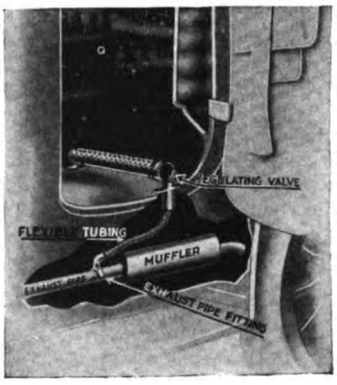
Car, engine and garage heaters are the subject of the suggestion in this number, and there is no better class of winter goods for the average dealer to stock and boost to his customers. Not only is there profit in every sale made, but in the case of some of the car heaters described in the following there is opportunity to secure the contract for installing the devices, which means more work for the shop department.

The manufacturers of the heaters are ready and willing to co-operate with dealers, garage and repair shop men everywhere in stimulating their businesses through handling their product, and in most instances offer very attractive inducements to their agents. The Accessory and Garage Journal has made special arrangements with them and it will be to the advantage of everyone writing to the manufacturers to mention the name of this magazine in their letters.

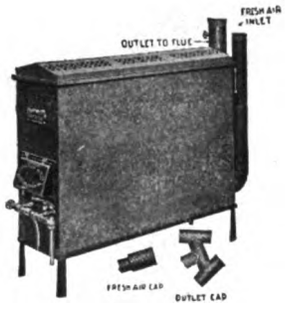
There are a number of different types of heaters on the market. The majority utilize the exhaust heat from the engine, radiating it in the interior of the car body. Other kinds are similar to the home hot water systems. Another type leads the heated air surrounding the engine into the interior of the car body. There also are electrically operated heaters, taking their currents from the battery or the generating installation, and there are self-contained types that derive their heat from the combustion of special carbon bricks.

Among the engine and garage heaters there is wide choice offered. In the first class mentioned there are devices that just keep the engine warm while in the garage, and others that are permanently installed and can be used either in or out of the garage. There are heaters designed to warm the carburetor to make starting easy, heaters that are operated by electricity for use in connection with the engine while the car is stored over night and others that use some kind of a petroleum fuel.

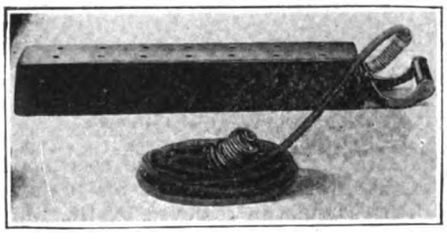
The majority of garage heaters are designed for the same purpose as the heating system in the home. Hot water attachments can be fitted to some of these and the owner has the pleasure and convenience of a constant supply of hot water in the garage.



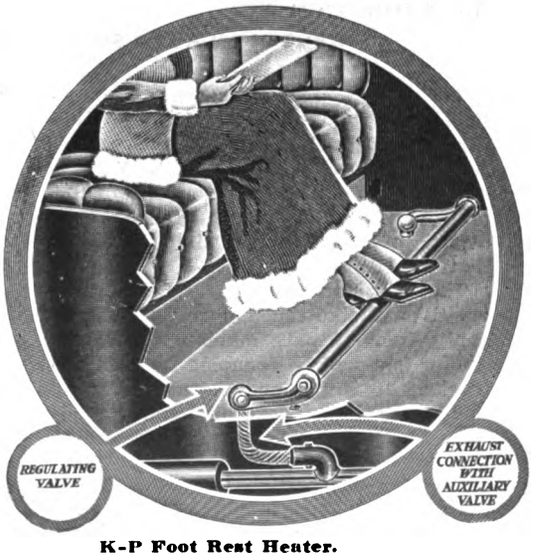
Cutaway View Utility Heater.



Superior Garage Heater.



Konsrv Combination Equipment.



K-P Foot Rest Heater.

The Utility Heater.

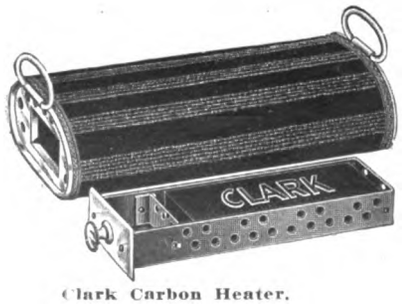
The Utility Heater, made by the Hill Pump Valve Company, Chicago, Ill., takes its heat from the exhaust pipe, through a flexible tubing, into a radiator in the form of a foot rail, the volume of heat being controlled by means of a valve at the inlet side of the heater. The foot rail can be fixed at any point on the floor. These heaters are made in two sizes, the Protected Heater, which is 28½ inches long and is adaptable to all makes of cars, and sells for $15 retail; and the Junior for Ford cars, priced at $7.50 and measuring 19½ inches in length.

Konsrv Electric Heaters.

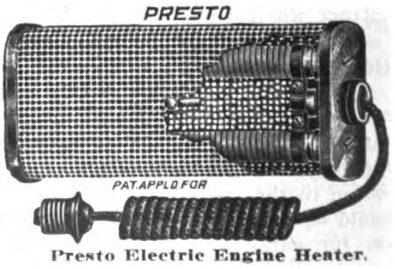
Several types of electrically operated heating devices are made by the Konsrv Electric Company, Cleveland, O., including three models for enclosed cars, a wheel heating apparatus, two types of radiators and one engine heater. The enclosed types are in the form of substitutes for foot rails and are either 14, 22 or 34 inches long, the first two being priced at $5 and the third at $6.50. Current is supplied by battery or generating equipment. The steering wheel heater retails at $5. It takes current from the battery or generator and has a control switch on the steering wheel. Current consumption is approximately four amperes, six volts.

K. P. Foot Rest Heaters.

The heaters made by the K. P. Foot Rest Heater Company, 250 W. 54th street, New York City, are of the exhaust pipe type, with provision to keep gas fumes, etc., from entering the car body. There are two models, one of brass, highly finished in white nickel and selling at $25 complete. The second model has malleable iron brackets and steel foot rail, finished



Clark Carbon Heater.



Presto Electric Engine Heater.

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in white nickel, and retailing at $17.50. Both types come in any length up to 40 inches.

Clark Heaters.

Clark heaters, of which there are 19 models offered by the Chicago Flexible Shaft Company, La Salle and Ontario streets, Chicago, are self-contained devices in which heat is generated by the slow burning of carbon bricks. The devices are either oval or rectangular in shape, of steel and covered with carpet in a variety of colors. The bricks burn for 12 to 16 hours, giving off a strong and continuous heat. The heaters are priced at from $1.50 to $10 and the bricks at 75 cents a dozen, or $6 for 100.

Presto Engine Heater.

The Presto Electric Engine Heater, the product of the Metal Specialties Manufacturing Company, 730 W. Monroe street, Chicago, is for use while the car is in the garage. Its oval form allows it to be placed almost anywhere on the engine, and it is indestructible and fireproof. Model 200, shown in illustration, sells for $3.50 complete with cord and attachment for connection to either direct or alternating current, 110 volts.

Mason Thermo Heater.

The Cox Brass Manufacturing Company, Albany, N. Y., makes the Mason Thermo Heater, which is operated from the exhaust pipe and is 28 by four inches and ⅞ inch thick. It sets ¼ inch above the floor of the tonneau, giving room for circulation and ventilation underneath. Two kinds are marketed, an all bronze, heavily nickeled heater, selling for $15, and a cast iron type, finished in black enamel type, selling for $10. There is no danger of overheating and burning anything in the car, and the device does not cause back pressure on the engine. There is an automatic thermostat regulator to control the heat to any desired degree.

Consolidated Electric Heaters.

Two types of electric heaters, one for electric pleasure cars and operating on high voltage and another on low voltage for gasoline cars, are offered by the Consolidated Car Heating Company, Singer tower, New York City. They are formed like a foot rest and have thermostats to control the degree of heat. This company also makes an electric engine heater for use while the car is in the garage. It keeps the cooling system from freezing and makes starting easy, consuming a small amount of current at an average cost of one cent an hour.

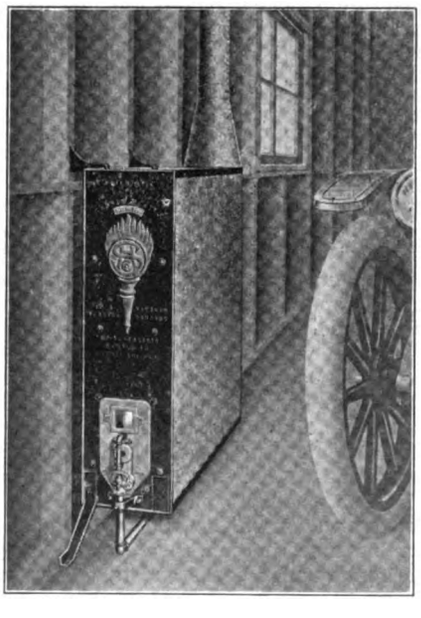
Superior Garage Heaters.

Among garage heaters the Superior, made by the Superior Manufacturing Company, N. S. Pittsburg, Penn., is a popular type and make. It uses either artificial or natural gas and has a pilot light which obviates the use of naked flame in the garage to light the heater. It is so designed that if gasoline fumes are present in the garage they cannot come in contact with the flame of the heater. The fumes from the device itself pass directly to the outside.

Mason Thermo Heater.

"Wickless" Kerosene Heater.

Thorwald's Electric Carburetor Heater.



Scientific Safety Heater.

Kerosene Heater.

The Wickless Safety Kerosene Oil Heater, made by the Safety Stove Company, Grand Rapids, Mich., is self-regulating when once started and its burners are of a special design that will not wear or burn out. No wicks, springs, packing or levers are used, and the heater is entirely enclosed from the air of the garage. Several sizes are made, with or without water tanks, they ranging in price from $16 to $30.

Electric Carburetor Heater.

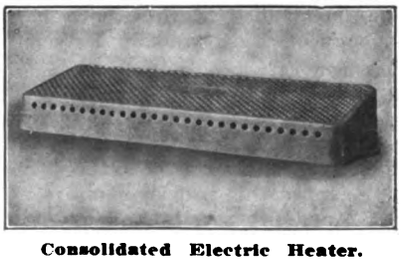
An electric carburetor heater, called the Thorwald, is manufactured by the E. H. Sprague Manufacturing Company, Omaha, Neb. It is attached to the carbureting system and has a heating coil that raises the temperature of the gasoline before it enters the carburetor. The heater operates from the storage battery and consumes about the same amount of current as the lighting system. The control switch is located on the dash. This device is designed for permanent installation and retails at $5 complete.

Scientific Garage Heaters.

Three sizes of Scientific-Safety Garage Heaters are offered by the Scientific Heater Company, Cleveland, O., they being priced at retail at $27.50, $35 and $50. The heater uses gas as a fuel and gives an even distribution of warm air to protect the radiator, battery, bearings, etc., of the car and, incidentally, to heat the garage. Even if gasoline is spilled on this heater there is no danger of explosion, and the device is made otherwise fool proof. No matches are required to start this heater, there being a self-lighting attachment.

CHARLES E. DURYEA WILL BUILD $250 AUTOMOBILE.

Charles E. Duryea has formed a $4,000,000 company to manufacture an automobile using his patented roller drive. The car will be called the Duryea Gem and will sell for $250. An issue of 20,000 shares of the company is being offered in Wilkes-Barre, Penn., at par ($5). A factory site has been chosen and a cutlery works leased, where manufacturing operations will soon be started.



Consolidated Electric Heater.

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The Iron Safe Clause is in Your Insurance Policy. Do You Know What it Means?

By ELTON J. BUCKLEY.

INASMUCH as every reader hereof, if he carries insurance on his stock and fixtures, is bound by what is known as the iron safe clause of the policy, the following letter and my discussion of it should be of universal interest:

On the 10th of October our store was totally destroyed by fire, oil heater explosion in the evening.

That same day we had sold to a man from Detroit. He had asked to see our books and invoice. Same were accidentally left out of safe in desk and burned up, we just getting out of upstairs with our lives. We had $9000 insurance in four companies; they refuse settlement because of iron safe clause.

The bank has totals of invoice, also a check record of all our business. In this way we can prove our loss was nearly twice our insurance. We have procured duplicates of our bills bought last year also. J. C. L.

As I said, practically every—in fact I suppose literally every—insurance policy on stock and fixtures contains the iron safe clause. It is one of a trio of three familiar clauses which now appear in all insurance policies. The first requires the insured to keep a complete set of books. The second requires him to take an inventory, at least once a year, and the third is the iron safe clause, which requires the keeping of the books, at night when the store is closed, in an iron safe. These three provisions are usually in some such form as this:

It is a part of the conditions of this policy that the insured shall keep a set of books showing a complete record of business transacted, including all purchases and sales, both for cash and credit and take an itemized inventory of stock on hand at least once every year: and it is further agreed that insured will keep such books and inventory securely locked in a fireproof safe at night and at all times when the store mentioned in this policy is not actually open for business. It is further agreed that in event of loss, insured will produce said books and inventory. Failure to comply with these conditions shall render this policy null and void and no suit or action at law shall be maintained thereunder for any loss.

The importance of the above correspondent's question can now be seen.

The iron safe provision has been upheld in almost every state and there is now no question as to its validity. I have reason to believe that thousands of merchants—not always the smallest ones either—ignore this provision entirely. If they do, and fire results, and by reason of the fire they cannot produce their books and inventory, or any good substitute for them, they will lose their insurance without a doubt. The policy is only void, however, when failure to keep the books in the iron safe results in inability to produce the books after a fire. If the books and inventory are rescued the policy stands, even though they were not kept in the safe. The theory of this clause is perfectly sound. It is that the books and the inventory are the best evidence of what goods were on hand at the time of the fire. And a merchant who carelessly sacrifices that evidence will not be permitted to guess at what he had on hand.

ARE you in need of legal advice? Do you want first class professional service at no cost to yourself? If so, address a letter to Mr. Buckley, in care of the Legal Department of the Accessory and Garage Journal, detailing your troubles as clearly as possible. He will give immediate answer, eitehr on this page, for the benefit of other subscribers who may have the same trouble, or direct by mail, as the inquirer specifies. The writer should sign his full name and address, but only initials or a pseudonym will be published in these columns. The service is free to subscribers to this magazine.

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The iron safe clause is in force only when the store is closed for business. As long as it is open no matter what hour it is the books need not go in the safe.

I find from an examination of the cases that there is a tendency on the parts of the courts to prevent insurance companies from being too technical about the iron safe clause. In other words, from laying any traps for their customers. The courts realize the need of the very best possible evidence of what property has been destroyed by a fire. And they will not shield the business man who carelessly loses that—where the loss is vital. But there is quite a number of cases which hold that where the failure to keep the books in a safe did not prejudice the insurance company, in other words, did not make it liable to have to pay too much damage, the policy will be allowed to stand. For instance, in one case, a merchant had kept regular books and taken inventory as he was required to do, but a fire struck him one night when some of his books were out of the safe, and the latter were destroyed. The insurance company pleaded the iron safe clause and refused to pay, although everything bearing on the fire which the burnt books had contained could be supplied from other records. The court refused to invalidate the policy for such a reason, ruling that the loss of the books was not vital since there were duplicate records of all they contained.

Another case bore considerable similarity to the correspondent's. A store which was covered by a policy containing the iron safe clause was closed one night, but the proprietor stayed behind to take an inventory. The books were accidentally left out and destroyed by a fire which occurred while the proprietor was actually working there, and the insurance company refused to pay. Here, too, the merchant could furnish from other records all that the destroyed books would have shown.

The court said it must pay, because the destruction of the books did not deprive the company of any information about the goods on hand at the fire: all this was forthcoming from duplicate invoices.

As I understand the correspondent's case, the store was closed for business, and some of the books were out of the safe, and were destroyed by the fire. The occupants of the floor above barely escaped with their lives. If the goods on hand at the time of the fire can be shown by other records, and if all the information which the books would have given can be supplied in some other way, I believe that the court will probably rule that the object of the iron safe clause, i. e., the supplying of complete information regarding goods on hand, has been fulfilled, and the policy will not be invalidated. But I apprehend that it will be a close call.

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WOULD DISCOURAGE DISHONEST ADVERTISERS.

A country wide campaign of prosecutions of dishonest advertisers is being planned by the American Fair Trade League, which has headquarters in the Fifth avenue building, New York City. The organization will co-operate with local commercial and merchants associations or with individual merchants for the protection of the public and will give prompt attention to any information that is given them in confidence.

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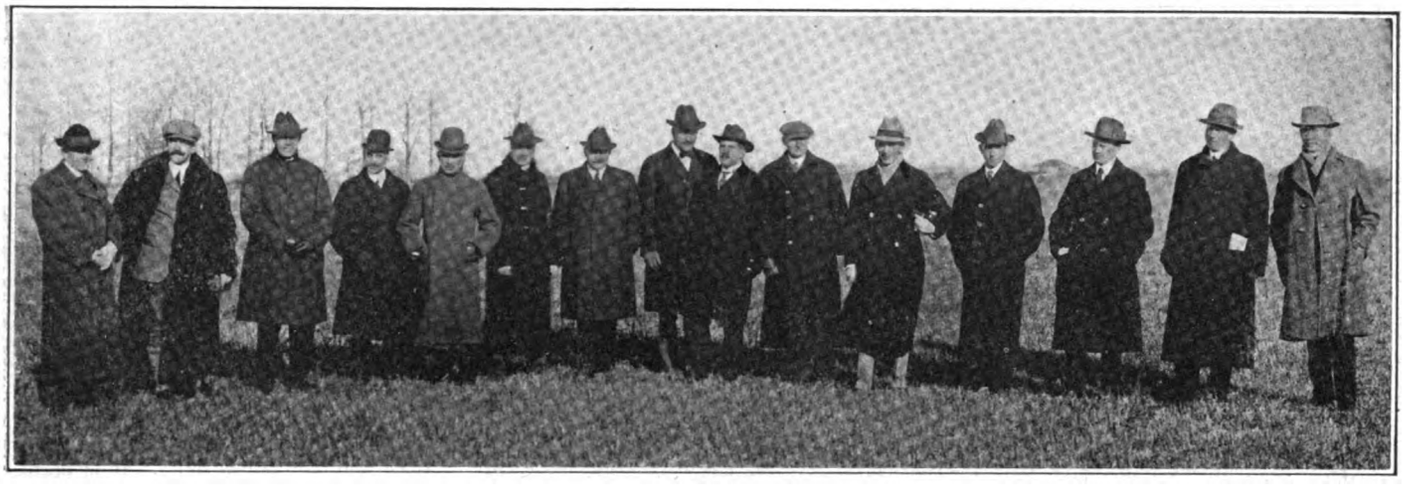

The Men Who Inspected the Joy Aviation Field, Detroit—From Left to Right: W. H. Hutton, Henry B. Joy, Chas. B. King, Dr. H. C. Dickinson, Bureau of Standards; Lieut.-Col. Geo. O. Squier, in Charge of Aviation; Eugene Lewis, Dr. W. Stratton, Director of Bureau of Standards; Henry Souther, Consulting Engineer, U. S. A.; Dr. Chas. F. Marvin, Chief of Weather Bureau; Howard E. Coffin, Sydney D. Waldon, Lieut. W. G. Child, U. S. N.; Roy D. Chapin, Dr. Chas. D. Walcott, Secretary Smithsonian Institute; Russell Huff.

HAPPENINGS AMONG THE CAR AND PARTS MAKERS.

What Several of the Leading Manufacturers in the Motor Vehicle Industry and Allied Lines Are Doing or Have Under Consideration.

The Du Pont Company, Wilmington, Del., is offering a new product known as pontoklene. It is an automobile polish, grease and tar remover. This polish cleans and removes dirt, grease and tar with ease and polishes with practically no rubbing. Furniture can be polished with pontoklene.

The Packard Motor Car Company, Detroit, Mich., through its chairman, Henry B. Joy, of the board of directors, recently had the representatives of the U. S. Army and Navy, government and officials and engineering scientists make a tour of inspection of the Joy aviation field on the Michigan shores of Lake St. Clair. The field is a level expense of 570 acres and being on the shores of the lake affords an excellent opportunity for both flights over land and water with aeroplanes and hydroplanes.

The Willys-Overland Company, Toledo, O., has one of the newest devices for the rapid handling of boxed and crated automobiles for export shipments. It is a three-ton overhead steel crane which travels over a track a quarter of a mile in length. The demand for Overland and Willys-Knight cars in foreign countries has grown so large that a speedier and safer way was needed to transfer the crated cars from the export packing dock to the waiting flat cars and gondolas.

The Elgin Motor Car Company, Chicago, Ill., has completed a three-quarter mile test track over which every car is tested before shipment. The factory is located near a steep hill, which provides opportunity to test the hill climbing qualities of every car. All tests are personally supervised by Elgin efficiency engineers.

The Pilot Motor Car Company, Richmond, Ind., will have its addition to the factory soon completed. This will permit an increase in production of 100 per cent. over last year. In the new building will be located the painting, trimming and body departments. The company makes a specialty of individual color schemes and trimming to suit the personal tastes of the purchaser.

The Duplex Truck Company was organized to take over the Duplex Power Car Company, Charlotte, Mich., and continue its business in Lansing, where a site will be purchased and a factory erected. The company has a capital of $1,000,000. H. M. Lee, assistant sales manager of the Reece Company, is president and general manager; H. E. Blander, vice president; George W. Hewitt, credit manager of the Reo, secretary. Harry Harper and Elgin Miflin are directors of the new company.

The Chalmers Motor Company, Detroit, Mich., has obtained permission from the Detroit city council to move Connor's creek, now forming the eastern boundary of the plant, to a point some 500 feet distant from where it now lies. The factory now owns 30 acres of land on which its present plant is located. It has a floor space of 818,800 square feet. The company employs a force of 5500 men.

The National Motor Vehicle Company, Indianapolis, Ind., has changed its name to the National Motor Car and Vehicle Corporation.

The Star Rubber Company, Akron, O., has been reorganized. L. H. Firey is president and treasurer of the company, R. R. Robinson is vice president and O. L. Weaver secretary. Other directors of the company are: H. B. Manton, I. R. Manton, J. P. Loomis and George D. Bates. The company will manufacture the Star tire. The existing plant covers 80,000 square feet and all facilities of this plant will be devoted to the manufacture of tires alone. The product will be sold entirely to exclusive agencies. The tires will be hand made, using Sea Island cotton fabric, pure fine Para rubber and a heavy breaker strip over the carcass.

The Champion Motors Company has located at Fulton, Ill., opposite Clinton, Ia., and will manufacture the Champion light delivery car. H. L. Widlar is president, N. F. Wildman vice president, William Greif secretary and treasurer and H. D. Mackaye is vice president in charge of production.

The Marvel Accessories Manufacturing Company, Cleveland, O., has increased its capitalization to $100,000 and a new factory building of greatly enlarged manufacturing facilities is now under way. When completed more than 45,000 square feet of working space will be available. The latest and most efficient machinery will be installed. The company produces a number of automobile accessories that are widely sold through jobbers. Among them are a complete line of vulcanizers, an adjustable socket wrench, valve grinders and combined tire chain fasteners and tire tool.

The Cadillac Motor Car Company has acquired in Detroit nearly 50 acres of land whereon it will erect a large plant to house all of its manufacturing activities. The company's business has outgrown the present facilities. The land was bought for $750,000. When this new plant is completed it will give work to 10,000 persons.

The Wheeler-Scheerin Company, Indianapolis, Ind., has changed its name to Doherty Scheerin & Co., and has moved to 207 South Meridian street. The change is merely a change of name and with the exception of the fact that busi-

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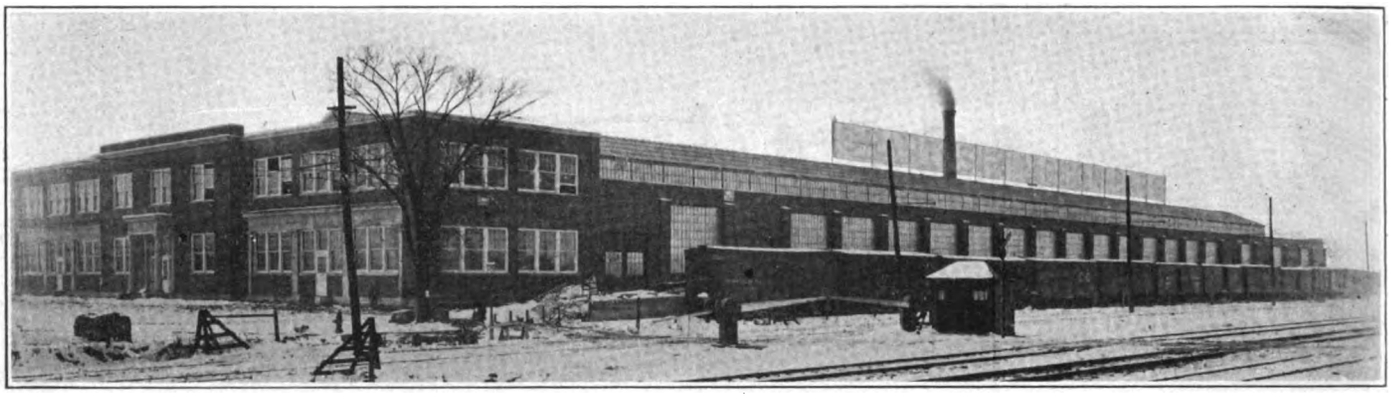


The New Home of the Grant Motor Car Corporation in Cleveland.

ness will be carried on at wholesale only the company will continue as in the past to handle supplies.

The Grant Motor Car Corporation has completed its factory in Cleveland and is now located there. The layout of the departments and the new machinery make human labor lighter and is a saving to both the company and its employees. Its situation in regard to railroad facilities is unexcelled in Cleveland.

The J. P. Gordon Company, Columbus, O., has been compelled to put on a night shift of over 200 power sewing machine operators. During the past 12 months the company has added two large additions to its plant, making a working floor space of more than 100,000 square feet.

The Union Truck Manufacturing Company, Inc., 250 West 54th street, New York, N. Y., has established several agencies for Union attachments throughout New York, Connecticut, New Jersey, Rhode Island, Pennsylvania and Havana, Cuba.

The Franklin Automobile Company, Syracuse, N. Y., has notified all Franklin dealers that, effective March 1, 1917, the prices of all models included in the Franklin line will be increased $100 each.

The Scripps-Booth Corporation, Detroit, Mich., will during the coming year appoint new dealers to distribute the Scripps-Booth car. The production has greatly increased and the demand for these cars has made this move imperative.

The Savage Tire Company, San Diego, Cal., has added to the group of its factory buildings a warehouse of brick and steel construction. It is erected on the tracks of the San Diego and Arizona railroad and will handle all the car load shipments besides being used as a supplementary storehouse for the raw materials and an overflow storehouse for finished tires.

The Millbury Rubber Company, Millbury, Mass., has incorporated with a capital stock of $90,000 and plans to make automobile tires in the plant of the Stoddard Rubber Company, Inc., which has been acquired. DeForest E. Martin is president and Albert W. Blackmer treasurer. New equipment is to be bought for the Stoddard plant and the output increased.

The Crown Tire and Rubber Company, Omaha, Neb., has started the building of the first unit of a tire and rubber plant. The company will produce 300 tires and 250 tubes daily. It is planned to have the building up and machinery installed in August, 1917.

The J. B. D. Resilient Wheel Manufacturing Company, Milwaukee, Wis., which was organized about three years ago to manufacture and market a solid tire wheel for passenger cars and trucks, has changed its name to the Motor Parts Machine Company. The plant at 675 Smith street has been extended and enlarged to include the production of a varied line of car, truck and tractor parts for the trade.

The Saunders Motor Power Company, East St. Louis, Ill., is preparing to equip a plant for the manufacture of a rotary motor operated by steam, gas or gasoline. J. H. Keys is president.

The Stetson Motor Car Company, Dover, Del., has been incorporated with a capital of $1,000,000 to manufacture automobiles and appliances. The incorporators are P. A. Zizelman, W. Hanford and C. W. Van Ranst.

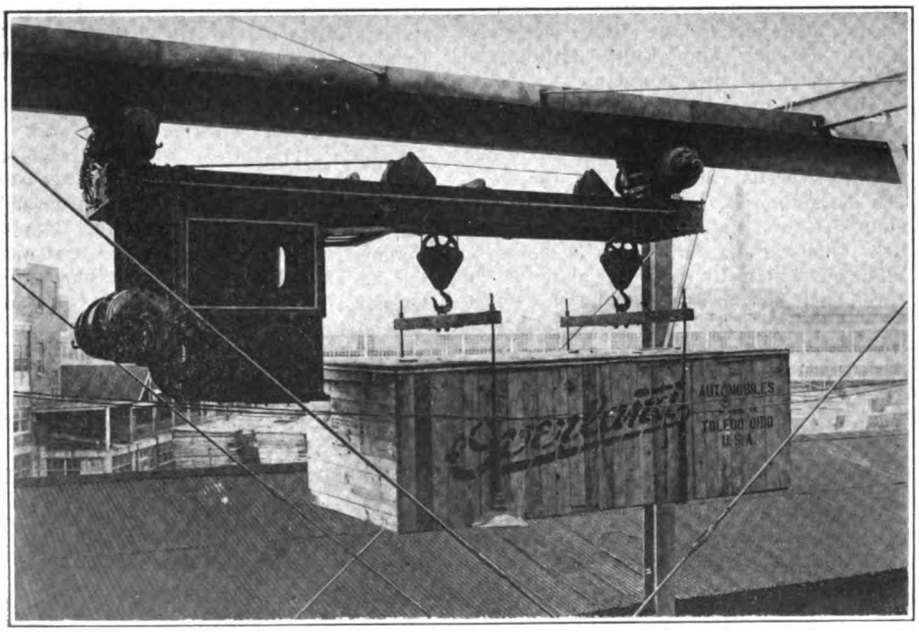
The A. O. Smith Company, Milwaukee, Wis., has announced a 10 per cent. increase in wages for all employees drawing less than $125 per month. This affects approximately 1400 workers.

The John O. Heinze Company, Springfield, O., manufacturer of starting and lighting apparatus, is at present confining its entire efforts to the manufacture of Ford starters. The factory has a daily capacity of 100 outfits and has 280 employees. The company manufactures all of the electrical apparatus, doing its own winding and manufacturing its fixtures and regulators.

The United Hammer Company, Boston, Mass., has purchased the power hammer business of the E. and T. Fairbanks & Co., St. Johnsbury, Vt., which marketed them under the name of Dupont.

The Four Wheel Tractor Company, Clintonville, Wis., has taken over the Utility Steel Tractor Company, Antigo, Wis., and will market the Utility tractor in improved form.

The Hayes Manufacturing Company, Detroit, Mich., body builder, has increased its capital to $1,500,000. The original capital consisted of $500,000 in common, $135,000 preferred and $60,000 in bonds. The company has a surplus of $440,000 for this year. A part of the increase in capital is a 75 per cent. stock dividend, $625,000 worth of stock being



The Willys-Overland Company Uses a Three-Ton Traveling Crane to Convey Packed Overlands for Export Shipment to the Shipping Departments. This Makes the Handling Easier, Safer and Speedier.

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issued in all. Earnings for the five months of the current year were $114,000.

The Sayres & Scoville Company, Cincinnati, O., will enlarge its factory to manufacture automobiles and special motor trucks. The company specializes in carriages.

The Midcontinent Tire Manufacturing Company, Wichita, Kan., will built a $65,000 structure as the first unit of its plant. It will be two stories high and 60 by 280 feet.

The Fuller & Sons Manufacturing Company, Kalamazoo, Mich., plans to erect an addition to its plant. It will be four stories high, 180 by 60 feet, practically doubling the present space and enabling the company to increase its output by 100 per cent. The building will be of flat slab, reinforced concrete, and will be filled with modern machinery to produce transmissions.

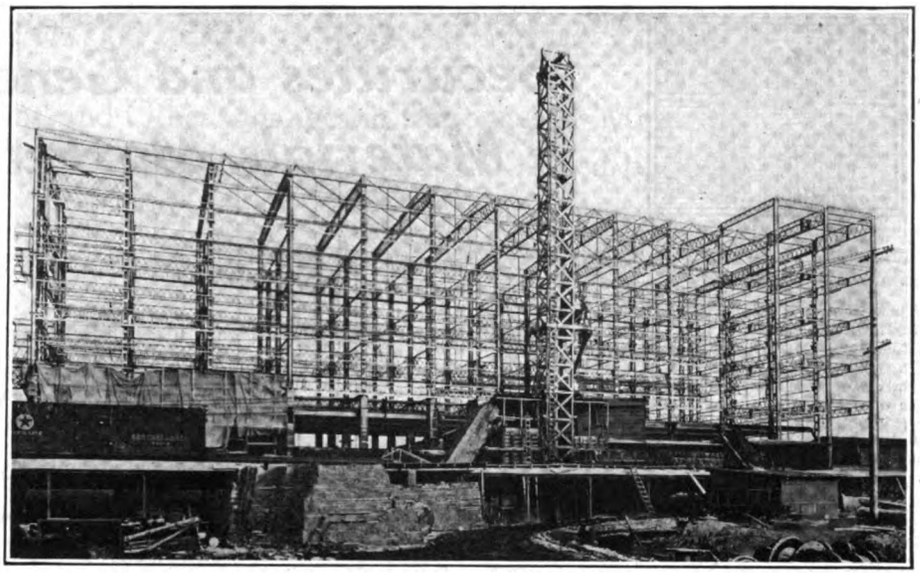
The Alpha Rubber Manufacturing Corporation will locate in Genoa, Ill., to manufacture automobile tires and tubes. J. A. Berger is president and general manager, Carl Schneider is vice president.

The Michigan Hearse and Motor Company, Grand Rapids, Mich., is expanding its plant. The addition is to be 100 by 60 feet and will be devoted to the construction of bodies.

The Porter Rubber Company, Salem, O., will increase its capital from $125,000 to $250,000 to permit expansion and the probable construction of another plant.

The Post Tire and Rubber Corporation, St. Louis, Mo., recently incorporated for $1,500,000, has bought the plant of the Union Tire and Rubber Company. The building is a two-story brick structure with a total floor space of 70,000 square feet.

The Apperson Brothers Company, Kokomo, Ind., has taken possession of its new home and is now making good use of its increased facilities. The improvement consists of a group of well equipped modern buildings and they will be of marked assistance in aiding the future growth of the company.



Firestone Is Adding Another Building to Its Plant.

The Firestone Tire and Rubber Company, Akron, O., has under construction another new building and is adding another story to its main factory buildings, preparatory to increasing its output to 20,000 pneumatic tires a day. The structure will house all repair and mechanical departments. It contains approximately 86,000 square feet of floor space and is to be built of reinforced concrete and brick with large steel sash windows. Upon its completion the total factory floor space will be about 40 acres.

The Taylor Manufacturing Company, formerly of 969 Jefferson avenue, East, has moved to Redford, Mich. The new factory consists of three large floors and full basement and doubles the former floor space. The demand for Taylor crankshaft pumps is increasing rapidly, but with larger quarters and additional men the company is able to give excellent service.

The Crow-Elkhart Motor Company, Elkhart, Ind., has broken ground for large extensions to its factory. More than quarter of the floor space will be devoted to the manufacture of cars and the factory output commencing January is to be increased to a basis of 6000 cars a year. By the end of 1917 it is hoped to have the factory on a basis of 30,000 cars a year, the goal at which President Martin E. Crow is aiming.

The American Motors Corporation, New York, N. Y., states that the selling price of the American Six has been definitely set at $1285. Last winter contracts for materials were placed and it was planned to produce a car retailing for about $1100, but Mr. Chevrolet and his associate engineers believe it best to add some refinements and conveniences that necessitate a higher figure. The exhibition chassis to be displayed at the New York and Chicago shows has been prepared at the Plainfield, N. J., plant of the corporation under the direction of General Manager John C. Spiers.

The East Palestine Rubber Company, East Palestine, O., has increased its capital from $500,000 to $1,000,000.

The New Plant of the Apperson Bros. Co., Kokomo, Ind., Which Provides Ample Room for Future Expansion and Excellent Working Conditions.

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Securities and General Materials Markets.

	Nov. 15 Bid	Nov. 15 Asked	Dec. 12 Bid	Dec. 12 Asked
Ajax Rubber Co	70	73	70	72
J. I. Case, T. M. Co., pfd	83	85	87	90
Chalmers Motor Co., com	125	140	135	..
Chalmers Motor Co., pfd	105	115	110	115
Chandler Motor Car Co	105	105½	111	112
Chevrolet Motor Co	186	190	165	175
Fisher Body Corp	39	42	38	41
Fisk Rubber Co., com	..	93	80	90
Fisk Rubber Co., 1st pfd	109	113	110	115
Fisk Rubber Co., 2nd pfd	95	105	90	100
Firestone Tire & Rubber Co., com	1150	1170	162	165
Firestone Tire & Rubber Co., pfd	104	106	106	108
General Motors Co., com	810	875	650	825
General Motors Co., pfd	124	127	120	121
B. F. Goodrich Co., com	71⅜	71⅝	69⅜	69½
B. F. Goodrich Co., pfd	112	114	111	113
Goodyear Tire & Rubber Co., com	293	296	293	296
Goodyear Tire & Rubber Co., pfd	108¾	109½	108¾	109½
Grant Motor Car Corp	8	10	8	9
Hupp Motor Car Corp., com	5¼	6	3¾	4¾
Hupp Motor Car Corp., pfd	92	100	80	95
International Motor Co., com	4	8	48	..
International Motor Co., pfd	20	30	23	..
Kelly-Springfield Tire Co., com	77½	78	75	76
Kelly-Springfield Tire Co., 1st pfd	97	100	95	99
Keystone Tire & Rubber Co	..	..	15½	16½
Lee Rubber & Tire Corp	41½	41½	37	37½
Maxwell Motor Co., com	84½	84⅞	73½	74
Maxwell Motor Co., 1st pfd	85	86	81½	82
Maxwell Motor Co., 2nd pfd	54	54½	49	51
Miller Rubber Co., com	240	260	255	260
Miller Rubber Co., pfd	105	107	108	109
National Auto Corp	..	..	36	37
Packard Motor Car Co., com	..	175	168	173
Packard Motor Car Co., pfd	93	99	104	106
Paige-Detroit Motor Car Co	38	39	39	40
Peerless Truck & Motor Corp	23	25	22	24
Portage Rubber Co	170	173	167	169
Regal Motor Car Co., pfd	46	48	20	30
Reo Motor Car Co	77	79	46	48
Saxon Motor Car Corp	..	..	76	78
A. O. Smith Corp., pfd	..	..	96¼	97
Springfield Body Corp., com	95	100	85	95
Springfield Body Corp., pfd	120	130	120	130
Smith Motor Truck Co	..	..	6¼	6⅜
Standard Motor Construction Co	7	9	6	7
Stewart-Warner Speed. Corp., com	110½	112½	104	106
Stewart-Warner Speed. Corp., pfd	..	..	..	..
Studebaker Corp., com	128⅛	129	120	120½
Studebaker Corp., pfd	111⅛	112	109¼	112
Stutz Motor	..	..	63	64
Swinehart Tire & Rubber Co	90	92	..	88
United Motors Corp	64½	64¾	60½	60¾
U. S. Rubber Co., com	60¾	61⅛	65¾	66
U. S. Rubber Co., pfd	110	111	113¾	115
White Motor Co	55¼	56	53¾	54
Willys-Overland Co., com	42½	42¾	36⅜	36½
Willys-Overland Co., pfd	103	104	98¾	99⅞

DOMESTIC CRUDE OIL PRICES.

The prices of crude petroleum at the wells during the middle of the month of December were:

Pennsylvania dark	$2.75	Corsicana heavy	$ .50
Mercer black	2.20	Electra	1.00
Cabell	2.17	Henrietta	1.00
New Castle	2.20	Caddo, La., 38°	1.00
Corning	2.10	Caddo, La., heavy	.75
Wooster	1.65	Plymouth	1.08
North Lima	1.70	California oil	72 a 82
South Lima	1.48	Healdton	.40
Indiana	1.33	Moran	1.00
Princeton	1.52	Strawn	1.00
Somerset 32°	2.20	Thrall	1.00
Ragland	95	De Soto	.90
Illinois above 30°	1.52	Crichton	.70
Kan. & Okla	1.10	Canada	1.83
Corsicana light	1.00		

Naphtha.

	10-gal. drums Under 100 cases	10-gal. drums 100 cases and over
Benzine, 59-62°	33¼	32¾
73 a 76°	41	40½
Stove	33½	33
Auto, 68-72°	37	36½

	In cans and cases Under 100	100-199	200-299
Benzine, 59-62°	28½	28¼	28
73 a 76°	36¼	36	35¼
Stove	28¾	28½	28¼
Auto, 68-72°	32½	32	31¾

NEW YORK CITY PRICES.

New York City prices for petroleum and its products were:

Petroleum.

Crude, barrels, per gallon	15 a 18
Refined barrels	12

Motor Gasoline (Steel Barrels).

Garages	22	V., M. & P., deod., in steel	22
Consumers	24	V. M., & P., deod, in wood	24

Gasoline.

Gas machine, steel	40	68-70 degrees, steel	28
73-76 degrees, steel	31	68-70 degrees, wood	31
73-76 degrees, wood	34		

GENERAL MARKET PRICES.

	Nov. 14	Dec. 13
Antimony	12½	14½
Iron, foundry, S., ton	14.50	14.50
Iron, foundry, N., ton	19.00	20.00
Iron, Bessemer, ton	25.00	29.00
Steel, Bessemer, ton	50.00	55.00
Beams and chan., 100 lbs	2.969	3.419
Copper, elec., 100 lbs	33.00	35.00
Copper, lake, 100 lbs	33.00	35.00
Lead, 100 lbs	7.02½	8.10
Tin, 100 lbs	43.87½	42.75
Petroleum, Penn., cr., bbl	2.60	2.75
Petroleum Kan., cr., bbl	90	1.10
Linseed oil, raw	96	93
Rapeseed oil, refined	95	98
Lard oil, prime	1.30	1.30
Fish oil, Menhaden, br	62	73
Sulphuric acid, 60	3.00	....
Cottonseed oil, bbl	13.00	12.60
Silk, raw, Italy	6.90	7.20
Silk, raw, Japan	6.10	6.10
Rubber, fine, up-river, Para	82	81
Tire, scrap	5¾	6¼
Steel, open hearth, ton	50.00	55.00

FOREIGN TRADE OPPORTUNITIES.

(Adress Bureau of Foreign and Domestic Commerce, Washington, D. C., Giving Number, Which Will Forward Correspondence, Unless Otherwise Stated.)

23,023—A firm in Chile desires to secure agencies for American manufacturers and exporters of automobiles, gasoline, cement, groceries and canned goods, sugar, rice, paper, perfumery, clothing, cotton and woolen cloth, shoes, novelties, galvanized iron, both smooth and corrugated, for buildings, wire for fences, etc. Correspondence in Spanish.

23,027—A commission merchant in Spain desires to establish relations with American manufacturers of all kinds of machinery, leather belting, automobiles and accessories, electric motors, motor boats, optical goods, cinematographic apparatus, films, mineral oils and chemical products. Correspondence may be in English. References.

23,028—A municipality in Canada is contemplating the purchase of a motor driven fire truck and a horse drawn ladder truck.

23,036—A firm in Denmark desires to represent American manufacturers and exporters of automobiles, motor trucks, motor boats, antimony, copper, lead, tin, steel and aluminum. Interested in extending their business in that country and in Norway and Sweden. References.

23,046—A firm in Holland desires to represent American manufacturers of motor cars, motors and motorcycles. Reference. Correspondence in English.

23,110—An importer and commission merchant in the West Indies desires to represent American manufacturers of paint, hardware, automobile supplies and accessories, table ware, crockery, etc.

23,214—The owner of a garage in Spain is desirous of purchasing American automobiles and accessories. Quotations should be made c. i. f. destination. Payment will be made in cash. Correspondence in Spanish. References.

23,225—A man in Colombia would like to receive catalogues of automobiles, motorcycles and motor boats.

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Activities of Prominent Men of the Industry.

Resignations, Promotions and Other Changes in Personnel of Motor Vehicle Manufacturing and Merchandising Companies and Allied Businesses.

Fred A. Cornell is now assistant sales manager of the Cole Motor Car Company in charge of the service division. Mr. Cornell's experience dates back more than 12 years. As manager of the service department of the Willys-Overland Company he superintended the work of placing adequate parts of stocks in countries all over the globe. Later he was associated in a similar capacity with the Mitchell-Lewis Motor Car Company and just prior to his going to Cole held an important position with the Perfection Spring Service Company.

Arthur V. Farr, formerly advertising manager of the S. K. F. Ball Bearing Company, Hartford, Conn., is now sales manager of the Hess Steel Corporation, Baltimore, Md.

Fred E. Boylan has resigned his position as manager of the Detroit branch of the Swinehart Tire and Rubber Company and is now factory representative of the Sewell Cushion Wheel Company. Mr. Boylan will devote his time to the branches in Cleveland, Buffalo, Rochester, Boston, New York, Philadelphia, Baltimore, Pittsburg, Cincinnati, St. Louis, Chicago and Minneapolis.

Edward F. Swift, vice president of Swift & Co., Chicago, has been elected a director of the Willys-Overland Company, Toledo. Mr. Swift is well known as one of the heads of a great institution doing a business of over $6,000,000 per year, and he is expected to be of great assistance to the Willys-Overland Company, now the second largest producer of automobiles in the world.

W. P. Kiser, formerly treasurer of the Chalmers Company, will be secretary and assistant general manager. Mr. Kiser will be succeeded as treasurer by D. P. Turnbull.

W. P. Kiser, Secretary of the Chalmers Company.

Fred A. Cornell, Cole Company.

Arthur Harrop has resigned his position with the Corbin Screw Corporation and joined the forces of the Frank Mossberg Company, Attleboro, Mass. Mr. Harrop fills the position formerly held by Frank T. Chase, who is now with the Buffalo Metal Goods Company.

Edwin A. Fitts, formerly secretary and treasurer of the Autocar Company, Ardmore, Penn., has been elected vice president, and Frank C. Lewis has been elected secretary and treasurer. John C. Taney has been elected to fill the vacancy caused by Edwin Lewin's advancement. The other officers are David S. Ludlum, president; Louis S. Clarke and Walter W. Norton, vice presidents.

C. A. Pfeffer, vice president and assistant general manager of the Chalmers Motor Company, has announced his retirement from active service. He intends to continue as a director of the company and will hold a very substantial stock interest.

Lee Anderson has been appointed vice president of the commercial division of the Hupp Motor Car Corporation. He has been a member of the organization for the past two years, first as advertising manager and later as commercial manager, and is well known in the newspaper and advertising field, having for years been connected with the Detroit News. He left the News to be assistant advertising manager of the Chalmers company under Harry W. Ford, and later was made advertising manager, which position he resigned to join Hupp.

A. E. Walden, formerly connected with the experimental department of the Chalmers Motor Company, has resigned to take charge of the service department of the C. T. Silver Company, New York Chalmers distributors. Mr. Walden is one of the most experienced mechanical men in the industry and has been connected with the Chalmers Company for the past five years.

T. P. Myers has been made general sales manager of the General Engineering Company, manufacturer of Abner Doble steam car. He manages the pleasure car, truck and other sales departments.

M. S. Dennet, chief inspector of the Packard Motor Car Company, has resigned and will represent the Muskegon Motor Specialties Company and the Ajax Forge Company in Detroit.

T. J. Tener has become director of sales of the Maxwell Motor Company. He was formerly Pacific Coast zone manager. C. E. Zebbins, formerly sales manager, is now assistant director of sales.

C. S. Richardson has been appointed advertising manager of the Chalmers Motor Company, Detroit. He was formerly with the Mahin Advertising Agency.

L. G. Herman has been appointed production and factory manager of the Bour-Davis Motor Car Company, Detroit. He was formerly production manager of the Kissel Motor Car and production manager for the Paige-Detroit Motor Car Company in 1915. From the latter he went to the plant of the Rutenber Motor Company to organize that plant.

Russell B. Merrill has been appointed to the position of director of purchases and traffic with the Wallace C. Hood Service Bureau, Detroit, Mich.

Russell B. Merrill, Hood Service Bureau.

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Oliver Du Charme, for the past 10 years Peerless representative in Albany and Troy, N. Y., has joined the city sales force of the Van Cortlandt Vehicle Corporation, metropolitan distributors for the Peerless cars and motor trucks.

E. C. Morse has been appointed vice president in charge of the selling division of the Chalmers Motor Company. Since entering the Chalmers company the efficiency of the departments have greatly increased under his charge.

Horace N. Trumbull has been appointed advertising manager of the S. K. F. Ball Bearing Company, Hartford, Conn.

John S. Collins has been appointed sales manager of the Chevrolet Motor Company of Flint, Mich. Mr. Collins will have charge of the territory embracing the states of Michigan, Indiana and Ohio and portions of Wisconsin, Illinois, Kentucky, West Virginia, Pennsylvania and New York. He spent 13 years with the International Harvester Company. He succeeds Frank K. Lane, who has resigned.

D. F. Shanahan, Covington, Va., has joined the sales force of the Chase Motor Truck Company as special traveling representative.

A. B. MacGowan, formerly in the sales promotion department of the Chase Motor Truck Company, Syracuse, N. Y., is now city sales manager for that company at their Philadelphia branch.

E. A. DeLorenzi, a service engineer of the Briscoe Motor Corporation, Jackson, Mich., while on a tour of Briscoe distributors in the South received a hurried call from the British government for active service. Mr. DeLorenzi has sailed on the S. S. Locania for London. He holds a captaincy in the aerial corps.

L. G. Fairbank has been appointed eastern district manager for Akron company. He has been assistant advertising manager of the Firestone company for the past three years and succeeds D. C. Swander as district manager. Mr. Fairbank is now making a tour of all Firestone branches in the eastern district, discussing local conditions with the various managers and seeking better business methods.

John P. S. Harrison, former member of the United States embassy at Rome, has joined the staff of President John Guy Monihan of the Harroun Motors Corporation as manager of the corporation's foreign department.

J. F. Douse has been appointed sales and advertising manager of the George W. Miller Company, Seattle, Wash. Formerly Mr. Douse was manager of the Seattle branch of the Fisk Rubber Company. Mr. Williams will remain as general manager of the George W. Miller Company.

Herbert Dovey has been appointed manager of the Sturgis & Storie Company of Walla Walla, Wash., agent for the Buick, G. M. C. trucks and Bull tractors.

H. C. Plow has purchased the Automobile Owners' Accessory Company, Ltd., of Montreal, Canada. Mr. Plow, who is known to the industry as "Hy" Plow, was at one time treasurer of the Hartford Rubber Company.

H. B. Joy has resigned as chairman of the board of directors of the Packard Motor Car Company.

Christian Girl is president of the Standard Motor Parts Company, the combination of the Standard Welding Company and the Perfection Spring Company. The other officers of the new concern are: F. W. Prentiss, first vice president; W. E. Farr, second vice president; T. E. Borton, treasurer. C. C. Bolton and Arnold S. Goss, together with the officers above, will constitute the board of directors. P. A. Connolly is secretary, but not a director.

Gordon Muir has been appointed advertising manager of the Maxwell Motor Company, Inc. He has been with Maxwell for the past year.

Harry S. Graves, formerly with the General Motors Company, has been appointed sales engineer of the Russel Motor Axle Company of North Detroit, Mich. Mr. Graves has been identified

Harry S. Graves, Sales Engineer of the Russel Motor Axle Company.

with the automobile industry for more than 10 years, during which time he has been connected with several of the largest manufacturers in the country.

J. E. Stuerwald, New York, N. Y., special representative of the Garford Motor Truck Company of Lima, O., has returned from a year's absence in Europe, during which period he spent considerable time in Russia.

Chester S. Ricker, a well known consulting engineer, has formed the Ricker Oil Company in Indianapolis and has been elected its president. Associated with him are S. H. Penfield, vice president of the Salisbury Wheel and Manufacturing Company, and president of the Peru Auto Parts Company. Mr. Penfield will be vice president of the Ricker company. Robert Denham, an experienced oil man, is treasurer of the company.

C. R. Feelev has been appointed superintendent of the Pittsburg service branch of the Maxwell Motor Company.

Henry McLaughlin has been appointed factory manager of the Detroit plant of the Lewis Motor Corporation. He was formerly superintendent for Golden, Belknap & Swartz.

W. M. Williams has opened a general advertising office at 132 South Salina street, Syracuse, N. Y. Mr. Williams during the past year was a member of the advertising department of the Willys-Overland Company, Toledo, O.

M. H. Needham has resigned as advertising manager of the Nash Motors Company, Kenosha, Wis. He is succeeded by Ellis J. Travers, formerly an advertising representative in Chicago.

Frank B. Willis has become vice president of the Hal Motor Car Company of Cleveland, having resigned as sales manager of the Chalmers Motor Company. In addition he will act as assistant to President A. Ward Foots. He has had 16 years' experience in the automobile world.

Thomas G. Meachen, Syracuse, N. Y., has been elected a director in the Guaranty Securities Company of New York City. He is president of the newly formed Precision Die Casting Company, Inc. Mr. Meachen is best known as vice president and general manager of the New Process Gear Corporation, in which capacity he has become widely known in the trade.

Arthur T. Waterfall, traffic commissioner of the Detroit Board of Commerce, has resigned to become traffic manager for Dodge Brothers, Detroit. He is known as one of the foremost traffic men in the West. He is responsible for traffic improvements that have resulted in many millions being saved to Detroit shippers.

Victor Gauvreau has resigned as chief engineer of the Frontenac Motor Company to join the Buick Motor Company, Flint, Mich.

John Kearns has become general manager of the Lee Rubber and Tire Company. He was the organizer of the British Dunlop Company of Australia. Mr. Kearns was formerly with the Fisk Rubber Company, Chicopee Falls, Mass., as vice president.

N. B. Ford has rejoined the sales force of the Corbin Screw Corporation, New Britain, Conn. He left two years ago to become connected with the Ford Chain Block and Manufacturing Company, Philadelphia, Penn. He has been connected with the Corbin company for 10 years.

W. H. Masten, formerly sales manager of the Moline Plow Company, Moline, Ill., has resigned to join the sales staff of the Oakland Motor Car Company, Pontiac, Mich.

E. F. Kellum, formerly associated with the Weston-Mott Company, Flint, Mich., has been appointed purchasing agent for the Columbia Motors Company.

Joe Gardham has joined the Chalmers Motor Corporation and will be connected with the sales and export department. He is a racing driver. Several years ago he was connected with the Chalmers company.

L. M. Lloyd, New York, N. Y., has become advertising manager for the Edward A. Cassidy Company. The company handles the national sales of many automobile accessories.

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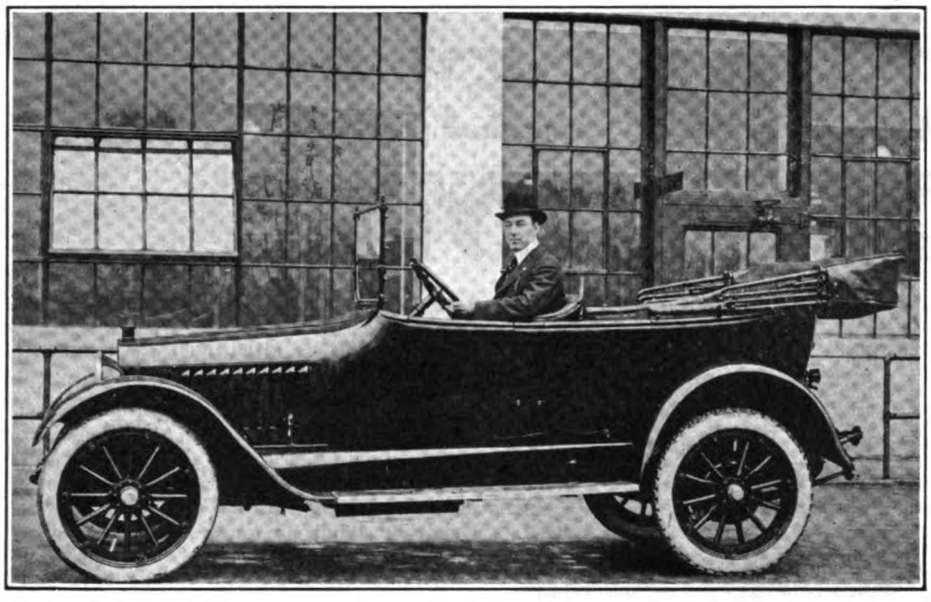

E. J. Thurber in the Chalmers Six-30, Which He Won in Chalmers Sales Contest.

Thurber of New Orleans Wins.

Salesman of W. P. Parkhouse Co. Takes First Prize in Chalmers Sales Contest.

E. J. Thurber of the W. P. Parkhouse Automobile Company of New Orleans, La., won the Chalmers Six-30 touring car which was offered at first price in the sales contest conducted for dealers and salesmen of the Chalmers Motor Company.

Dealers and salesmen everywhere, regardless of the size of their territory, were given an equal chance. Each competitor was assigned a secret quota, determined by the size and population of his respective field.

The sum of $4250 in cash was distributed among the contestants and also a number of gold watches, trunks and traveling bags. The second prize, $500 in cash, was won by A. E. Hamilton of the Chalmers Northwest Company, Minneapolis. Earl N. Manbeck of the Iowa Auto Supply Company, Des Moines, was awarded the third prize of $400. Other prize winners were as follows: Joseph F. Janin, Zell Motor Car Company, Baltimore, Md., fourth prize, $300; Roy Alley, Alley-Kesterson Auto Company, Lincoln, Neb., fifth prize, $200.

P. W. Maloney of Commerce, Tex., captured first prize in the distributors' contest and was awarded $1250 in cash. The second and third prizes of $500 and $300 respectively were won by E. S. Lingo of Norwich, Iowa, and the Brown Sales Company of Brown, Tex.

The Wyckoff Motor Company of Pittsburg was awarded first prize of $125 for dealers securing the greatest number of sub-agents, and the Arnold Automobile Company of Wichita, Kan., finished second, with the Chalmers Northwest Company third.

There were over 1200 salesmen and 500 Chalmers distributors entered in the contest.

SUCCESSFUL SHOW AT SPRINGFIELD, MASS.

The automobile show held in the Auditorium in Springfield, Mass., by the dealers of that city during the past week was the largest in point of attendance and number of cars displayed Springfield has ever had.

While all the usual attractions, including many fancy models, were incorporated in the show, the principal feature was the big parade conducted by the dealers during the week when hundreds of cars passed in review through the principal streets.

Following is a list of the dealers exhibiting at the show and their cars:

Springfield Buick Company, Buick; Williams Motor Sales Company, Dodge Brothers; Norcross-Cameron Company, Chalmers and Peerless; H. C. Knudson Company, Stanley; Springfield Buick Company, Buick; Dimm-Semmons Company, National; Harrington, Gifford Company, Hudson; Springfield Automobile Company, Franklin; Western Massachusetts Cadillac Company, Cadillac; Willys-Overland Company, Overland and Willys-Knight; Dunbar Motor Company, Oakland; Reo Springfield Company, Reo; Packard Motor Car Company, Packard; A. V. Reopell, Chevrolet; Stoddard Motor Car Company, Locomobile; Chandler Motors of Springfield, Chandler; F. H. Plympton, Haynes; Becker Automobile Company, Stutz; Forest Park Garage, Oldsmobile; Becker Automobile Company, Studebaker; F. E. Wing, Marmon; Mill River Motor Company, Jordan, Saxon and Mitchell; M. C. Barrett, Metz; M. F. Chase, Inc., Owen Magnetic; Fowler Motor Company, KisselKar; Sanford Street Garage, Stearns-Knight; Stoddard Motor Car Company, Hupmobile; Standard Auto Company of New England, Lexington; Dunbar Motor Company, Oakland; Russell's Auto Exchange, Inter-State; Blue Ribbon Garage, Pullman and Regal; Bunker-Bancroft Company, Velie; Springfield Motor Sales Company, Maxwell; Ford Motor Company, Ford; Fred S. Brewer, Empire; Canney Motor Company, Grant; Magna Automobile Company, Detroit Electric.

MINNEAPOLIS SHOW IN MAZDA FACTORY.

The 1917 Minneapolis automobile show will be held in the new factory building that was erected for the National Electric Lamp Association in that city, but which is not being used.

It was decided that the National Guard Armory, which has been used in the past for the shows, was unfit for the exhibition and also that the idea of band concerts and gaudy decorations only served to bring the curious and that these sightseers only served to interfere with real buyers who came to inspect the new models.

The following exhibitors have taken space for the show, which will be held during the week of Feb. 3-10:

Anderson-Hays Motor Company, Anderson Electric Car Company, Barclay Auto Company, Brice Auto Company, Chevrolet Motor Company, P. J. Downes Company, Fawkes Auto Company, Bohn E. Fawkes, Joy Bros. Motor Car Company, Locomobile Company, Harvey E. Mack Company, Minnesota Motor Car Company, F. W. Murphy Auto Company, Northwestern Auto Company, Northwestern Cadillac Company, Northwestern Cole Motor Company, Oakland Motor Company, D. A. Odell Motor Car Company, Pence Auto Company, Rauch & Lang Electric Car Company, Reilly-Herz Company, R. C. Smith Auto Company, John P. Snyder Company, Studebaker Corporation, Tri-State Auto Company, Twin City Motor Car Company, H. E. Wilcox Motor Company, Willys-Overland Company, Winton Company, A. F. Chase & Sons Company.

SCRIPPS-BOOTH SHOWN AT FRENCH FAIR.

Models of the Scripps-Booth cars, manufactured by the Scripps-Booth Corporation, Detroit, are being shown at the big industrial fair in Lyons, France. This fair was inaugurated to take the place of the one that was held annually at Leipsic. It will become an annual event and will be conducted on a larger scale when the war is over. Only a few exhibitors from other countries were alloted space at the show, a fact which has given the American makers of the Scripps-Booth cars reason to be proud.

ANNUAL CONVENTION OF A. A. G. O. IN CHICAGO.

The annual convention of the American Association of Garage Owners will be held Feb. 1 and 2 at the Auditorium hotel, Chicago, and a large attendance of garage owners, automobile dealers, shop men and service men is expected.

It is the plan of the association to increase the membership as largely as possible for during show week several thousand members of the retail branch of the automobile trade visit Chicago.

The annual convention of the Iowa Retail Auto Dealers' Association is to be held at Fort Dodge, Ia., on Jan. 9 and 10, and it is expected that several hundred members will attend.

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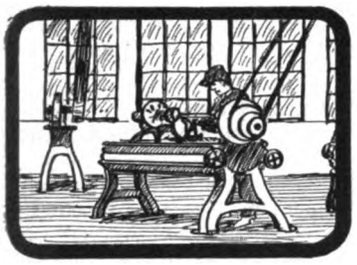
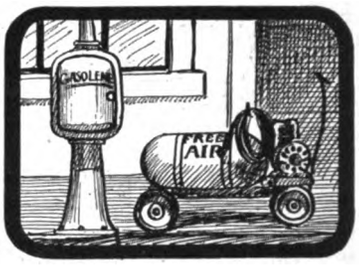


GARAGE EQUIPMENT



E & S TOWING TRUCK.

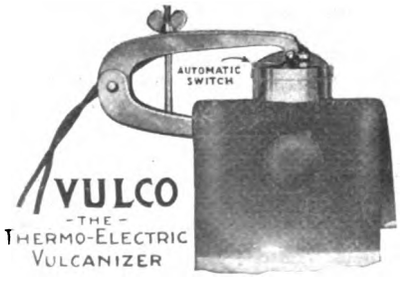
This truck is designed for use in hauling in disabled cars from the roadside. It consists of a frame mounted on two wheels and provided with a seat to which the axle of a car can be bolted and supported thereon. An extension of the frame furnishes a socket for the handles. The wheels are 14 inches in diameter, have four-inch steel tires, are equipped with roller bearings and the tread is about 18 inches. Two towing poles are furnished with this outfit, one of these is 10 feet long and the other is five feet long. In use the truck is placed under the axle and bolted in place. If it is a rear axle the long handle is used and extended under the car and firmly attached to the front axle by a sliding attachment for that purpose. If it is a front axle the short pole is used and the truck attached as on the rear axle. The entire weight comes over the centre of the axle of the truck. The road clearance is about five inches. Provision is also made for lubrication by means of grease cups. This is a sturdy and strong article and while capable of being easily handled, it is built to last and stand much hard usage.

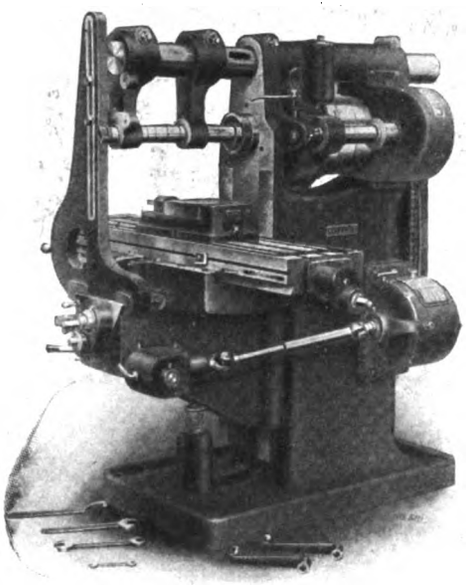
Made by the Ellis-Smith Manufacturing Company, Buffalo, N. Y. List price, $27.50.

PAN TOP RACK.

This shop equipment will be found to be very convenient about the garage, especially when a stand is needed to hold heated parts such as are used by drop forgers. It is composed entirely of metal and the pan top is of cast iron of sufficient thickness to withstand any reasonable load or shock. The pan is shallow at the front to facilitate the removal of small parts. Generally furnished with feet but can be equipped with casters. Made in two sizes.

Manufactured by the New Britain Machine Company, New Britain, Conn. Prices range from $9.25 to $18, according to size and equipment.





Kempsmith Milling Machine.

New Britain Pan Top Rack.

Ekern Portable Grease Gun.

KEMPSMITH MILLING MACHINES.

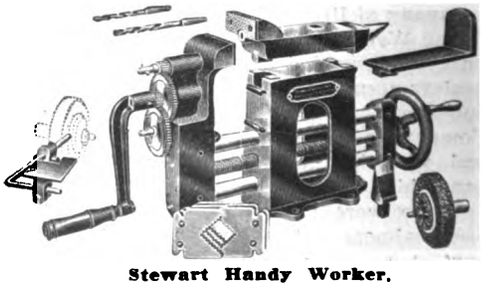
These machines are acknowledged among the best made and the types produced cover a wide range of work. Our illustration shows the Kempsmith No. 3 plain milling machine, double back geared, which is adaptable to machine and repair shops, service stations, etc. All feeds are automatic and positive and by power, the geared feed changing mechanism providing 16 changes. The machine is provided with a number of unique and valuable features which makes it one of the most flexible in use on the market. They are illustrated and described in detail in the maker's catalogue, which is free upon application. The table affords a large working surface and has three T slots. The whole equipment takes up about 114 by 66 inches in floor space. The longitudinal power feed is 34 inches, the transverse 11 and the vertical 20 inches.

Manufactured by the Kempsmith Manufacturing Company, Milwaukee, Wis. Write for prices and full details of construction.

NEW WALDEN-WORCESTER SETS.

Recognizing the increasing demand for special wrenches that will enable all workers on motor vehicles to do their jobs quickly, properly and economically, the maker of Walden-Worcester wrenches has introduced special sets for the Overland, Buick and Dodge Bros. cars as a supplement to the W-W Ford sets. They are shown in our illustrations and are designed to fit every nut, bolt and clamp and cap screw in any section of the chassis. All parts of Walden-Worcester wrenches are made of steel, the sockets are machine turned and broached 1/64 inch over size, making a perfect fit.

Manufactured by the Walden Manufacturing Company, 60 Commercial street, Worcester, Mass. Write for prices, which are surprisingly low.



Stewart Handy Worker.

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THERMO ELECTRIC VULCANIZER.

The Vulco thermo electric vulcanizer derives its heat from any six to 18 volt storage battery or from a Ford magneto. Thermostats within the device cut out the current the instant the exact vulcanizing heat is reached. To use, simply clamp on tube, throw in switch and when the curing temperature is attained the device is automatically disconnected. The maker claims a vulcanizing job can be done in five minutes at an average cost of five cents.

Manufactured by the V Air and Manufacturing Company, 1648 Tremont street, Denver, Col. Retail price, complete, $2.50; 12 prepared patches, 50 cents.

VAN DORN INTERNAL GRINDER.

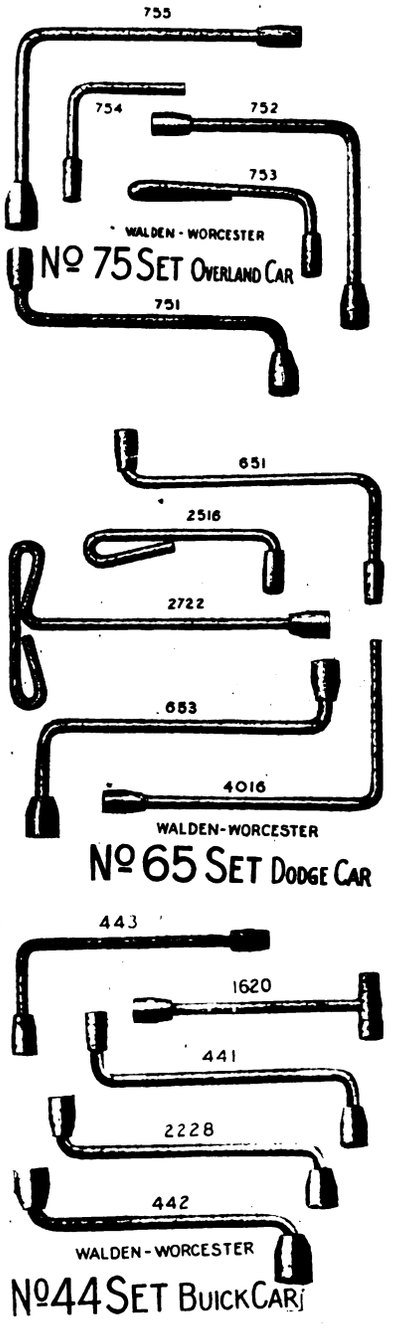
This machine equipment is built to meet a demand for a good electrically operated internal grinder to swing a four-inch diameter wheel minimum, and six-inch diameter wheel, maximum. Its speed on direct current is 4500 revolutions per minute and on alternating current 3400. It has a 14-inch extension arm and a six by ⅝-inch emery wheel. The armature of the tool runs in ball bearings, that at the wheel end being adjustable. It is arranged to be held rigidly in the tee slot of a lathe, and there is 90 per cent. vertical adjustment on the rocker arm.

Manufactured by the Van Dorn Electric Tool Company, 2692 E. Seventy-ninth street, Cleveland, O. Write for prices.

STANLEY GARAGE DOOR HOLDER.

The Stanley No. 1774 garage door holder consists of an arm of steel that holds the garage doors open almost at right angles, even against the most violent gusts of wind. A slight pull on the chain and the door is free to close. They are adapted for doors of any shape and for left or right hand doors. The length of the holding U arm is 30 inches. This device can be fitted even to curved top doors, and is valuable equipment for every garage owner.

Manufactured by the Stanley Works, New Britain, Conn. Write factory or apply to your distributor for prices.



Three New Walden-Worcester Special Wrench Sets for Garage and Repair Work.

PORTABLE GREASE GUN.

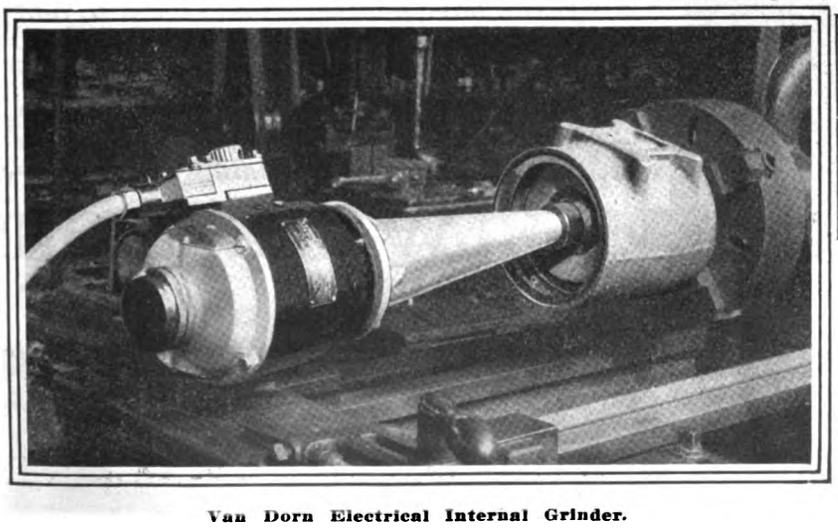
This is a portable receptacle for holding a supply of grease and is equipped with a pump for forcing grease where desired. It consists of a heavy seamless steel cylinder, mounted on wheels, which is a plunger worked by a handle through bevel gears. Connected up to this is a gauge showing the portion of contents used. The plunger is provided with leather packing and also an expansion ring. An automatic air vent is built into the piston to release the vacuum when pumping. When cranking the castors are lifted from the floor by a locking device to prevent slipping about. This equipment is desirable for filling the rear axle housing or a transmission box with grease. The capacity for grease is about 20 pounds and for oil about 2½ gallons.

Made by Ekern Brothers Manufacturing Company, Flandreau, S. D. Price, $35.00.

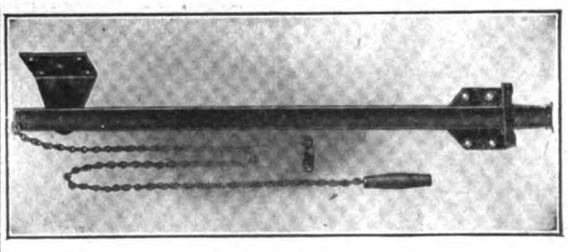
STEWART HANDY WORKER.

The Stewart Handy Worker consists of the principal machine shop tools built into one compact outfit, giving them the same efficiency as if separate and saving greatly in economy of space, materials and expense. The outfit comprises a two-speed drill press, grinding outfit, powerful vise and pipe vise, heavy anvil, metal cutter and a sturdy three-speed machine with clamp spindle for attaching and operating emery wheels, scratch brushes, buffing wheels, etc. Included with it are a 5" by 1" carborundum grinding wheel with a rest for holding the tool or material being ground; two square shank drills and a drilling rest; also a hardie to put in the anvil to cut small metals. By means of a train of three gears any one of three speeds may be had by inserting the handle furnished into the shank of the proper gear. This is for drilling or operating the emery wheels. The various parts are so arranged that they may be disassembled with ease to facilitate the changing of the outfit into a tool of different use.

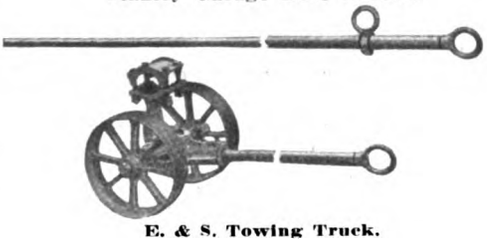
Made by Chicago Flexible Shaft Company, Chicago, Ill. Price, $12.50 each.



Van Dorn Electrical Internal Grinder.



Stanley Garage Door Holder.



E. & S. Towing Truck.

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WATER WELDING

TURN JUNK TO GOLD---

WATERHOUSE WELDING OUTFITS are seen everywhere—in busy garages, automobile repair shops, machine shops, factories, steel working shops, junk yards—always busy, always saving money and time and making great profits for the owners.

Experienced welders will tell you why they prefer WATERHOUSE outfits to any others. Examine the work—and there is a great diversity of it done—note how easy the jobs are accomplished, and how quickly. This will explain the reason for this preference.

Surprisingly little experience is necessary to operate a WATERHOUSE welder, and an operator will quickly become proficient with his work. Even more surprising is the volume and kind of work brought to welders—metal that was seemingly good only for "scrap" is restored to usefulness and made equal to new, with big saving to the owners and large profits to the workers.

(Outfit Complete.)

If you have a business and want to add to it, or want to establish an independent business, there is no investment you can make that will bring you so large returns as the purchase of a WATERHOUSE Welding Outfit.

WATERHOUSE

3 PELHAM STREET

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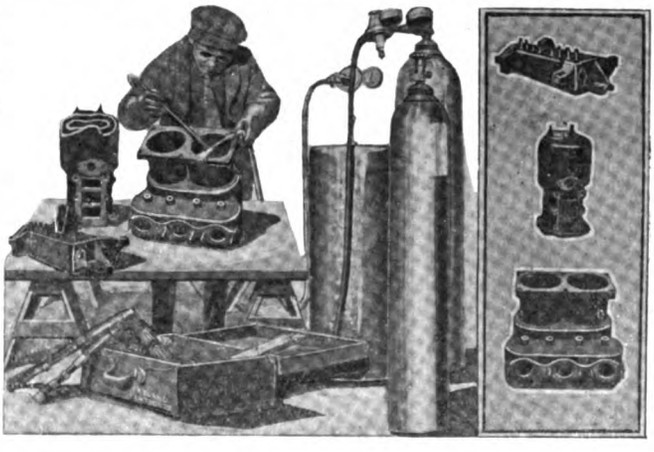
HOUSE OUTFIT

YOUR TIME TO MONEY!

A welding shop is a safe and certain business proposition—big enough for any investor, yet not beyond the reach of the average industrious worker.

When you buy a WATERHOUSE welding outfit the first cost is all the investment required. There can be no come-back---no dissatisfaction. WATERHOUSE equipment is made by the pioneer. It is safe to use in any work, and there is no other that has the same practical utilities and qualities. Yet the cost is no greater than what is charged for unknown or untried welding outfits.



With a WATERHOUSE outfit you have an equipment that is always serviceable, can be depended upon, that is extremely economical to operate, that is always efficient and will be equal to any need. With it all metals can be welded or cut. There is nothing more to be desired.

Start a welding business now. We have the type of outfit that you can best utilize and at the price you can easily afford to pay. With a complete book of instructions you can undertake any work and make your share of the big profits.

For Detailed Information and Copy of Instruction Book Write Today

WELDING COMPANY

BOSTON, MASS.

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Labor and Money Saving Suggestions for the Motor Car Repairman.

HINTS FOR HANDLING NUTS.

(Figure 1.)

When a thread has become so badly damaged that a nut cannot be replaced, and a standard die is not available for rethreading, a steel nut of proper size can be used successfully. The nut should be annealed and a V slot cut across the threads and into the body of the nut, as shown in the sketch at A. Use a very fine file so that burrs will not be raised. Next temper the nut in the customary manner, after which screw the improvised die on the thread several times and the irregularities will be removed. Different sized steel nuts can be treated in this way and the owner will have a set by which he can perform work as well as by the more expensive stocks and dies.

Another handy device to have about the garage is a spanner, similar to that shown in the sketch at B and C. The spanner consists of a piece of steel stock cut to fit over the nut, and having a lip against which to strike a hammer or other tool to start a nut that is rusted in place. If the nut itself is struck it is liable to become badly damaged.

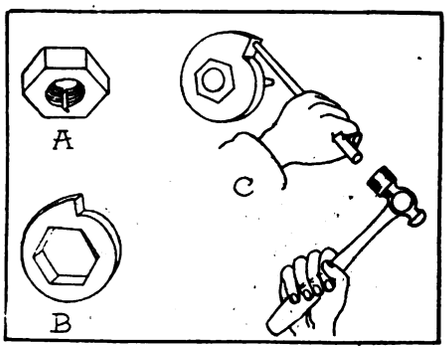

Fig. 1—Hints for Handling Nuts.

ADJUSTABLE OIL FUNNEL.

(Figure 2.)

A handy adjustable oil filler can be made from an ordinary funnel and a section of flexible carburetor tubing, armored lighting cable or flexible brass horn tube. Cut off the tip of the funnel, as suggested in the sketch, and solder in its place a suitable length of the flexible tube mentioned. The free end of the tubing is placed in the oil reservoir, which is generally in a place difficult of access by the ordinary means, and the oil poured into the funnel. In this way oil is not spilled or otherwise wasted.

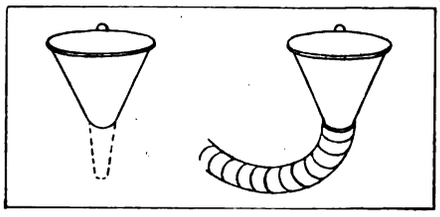

Fig. 2—Adjustable Oil Funnel.

EMERGENCY WHEEL REPAIR.

(Figure 3.)

Should the hub casting in the rear wheel of a motor car become so badly damaged that it cannot be driven by the key in the axle, an emergency repair can be made as shown in the sketch. Fit a strong pipe wrench tightly on the axle and strap the handle to a spoke of the wheel. In this way the power will be transmitted from the axle to the wheel without the aid of the key. The wheel may wobble quite a bit when the car is running, but it is almost impossible for it to come off or loosen the grip of the wrench.

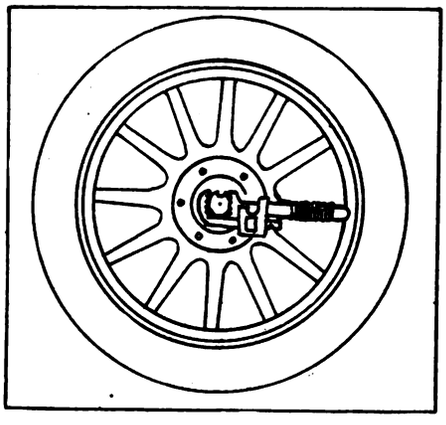

Fig. 3—Emergency Wheel Repair.

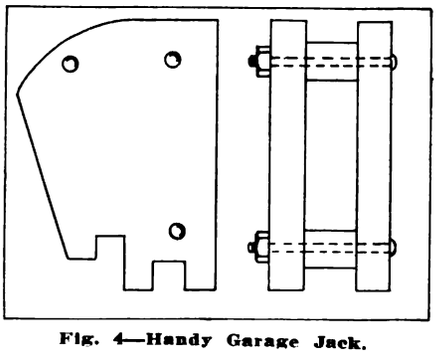

Fig. 4—Handy Garage Jack.

HANDY GARAGE JACK.

(Figure 4.)

A handy jack for use around a garage that will be quick acting, although not adjustable, may be made from a couple of good heavy boards cut with a rounded corner as shown in the sketch. Two boards cut alike should be bolted together by means of a third "spacer" board, so that the jack will be stable and not fall over sideways when in use. Two notches are cut in the boards, one for the front axle and one for the rear axle, these, of course, to be at the proper height from the base. The jack is put in place with the slot under the proper axle and by the power of the car or by other means the car is forced by the rocker section action of the jack up onto it, off the ground. To remove from the jack it is only necessary to push the car in the proper direction.

EMPTYING OIL BARRELS.

(Figure 5.)

To transfer the contents of a barrel of oil to a tank in the garage try the following method, which has been adapted by an enterprising garage man who believes in making machinery work for him: Place a three-inch wooden plug tightly in the barrel, as shown, and into this fit snugly the entire valve stem taken from an old inner tube. Also tightly fit an old gas pipe into the plug, allowing it to extend near the bottom of the barrel. The pipe should be led to the garage tank to be filled. To operate it is only necessary to attach the hose of a motor driven tire pump installed in a car to the valve stem. The pressure of air will force the oil from the barrel quickly.

SMOOTHING A BORE.

(Figure 6.)

A small portable electric motor can easily be used to smooth up the inside of a bore as follows: Turn up a piece of stock, one end of which is of a size to fit into the chuck of the electric drill. Turn up the other end smaller than the hole to be finished and cut a slit in it as shown. Insert one end of a strip of emery cloth through the slit and wind it around the shaft a few times in the opposite direction from that in which the shaft rotates. Clamp the electric drill with the attached shaft and emery wheel affixed, in a vise and run the piece to be smoothed back and forth over this shaft. Of course, different grades of emery cloth may be used to get as fine a surface as desired. The whole outfit can

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be easily moved about in a short space and will prove a great saving in time as well as giving a better finish than can be obtained by hand work.

JAR STAND.
(Figure 7.)

A simple stand which will tend to prevent just this kind of a mishap is illustrated herewith. It may be easily made by anyone as follows: In the centre of a piece of brass or sheet iron about a sixteenth of an inch thick, having a length or breadth at least twice the diameter of the base of the jar or bottle to be supported, draw a circle having a diameter just barely larger than that of the bottle. Lay off the circle into eight parts, drawing diagonals as shown. Cut along these diagonals and bend along the circle drawn. Now having bent the triangular shaped projections into an approximately perpendicular position, place the bottle as shown.

HANDLING SMALL SCREWS.
(Figure 8.)

There are numerous places about a motor car in which it is practically impossible to hold a small screw and use a screw driver upon it at the same time. In such cases make at one end of a piece of thin wire a loop of a diameter equal to that of the body of the screw. When the screw is placed in the loop it can be held steady and can be easily inserted in the hole. After the thread has caught the wire, being soft, can be pulled away.

HAND GUARD.
(Figure 10.)

Anyone who has had occasion to cut sheet metal with the ordinary hand metal shears knows that the metal has a decided tendency to roll over, which often results in nasty scratches and oftentimes quite serious cuts. The edges of metal so cut are ragged and sharp and easily tear flesh or other things that come in contact with them. To protect one's hand from this danger a shield is often used. This may be made of a substantial piece of tough leather, but not so stiff that it will not be pliable and flexible. This is cut so as to fold as shown in the sketch and is held by a clasp so as to enclose the hand and one arm of the shears. The thumb being practically free from danger is left out of this shield. This interferes in no way with the cutting of the metal and saves many a bad scratch or cut which if neglected might develop into serious complications.

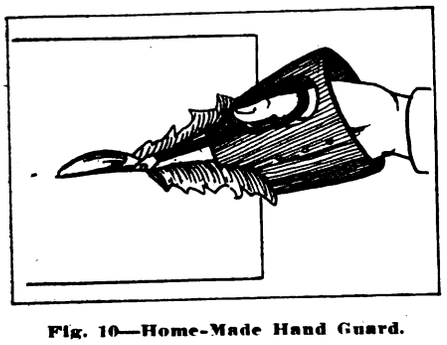

Fig. 10—Home-Made Hand Guard.

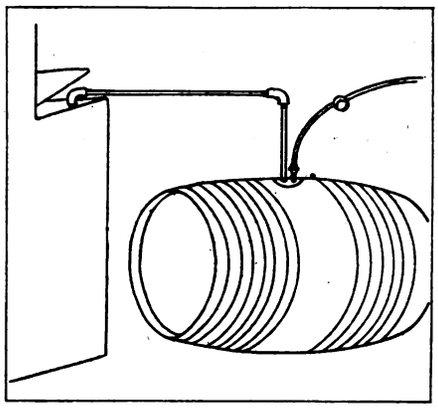

Fig. 5—Emptying Oil Barrels.

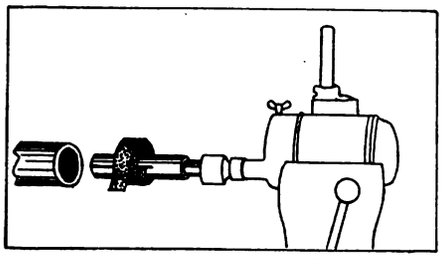

Fig. 6—Smoothing a Bore.

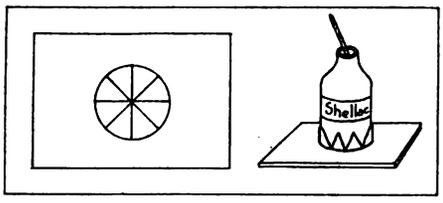

Fig. 7—Shellac Jar Stand.

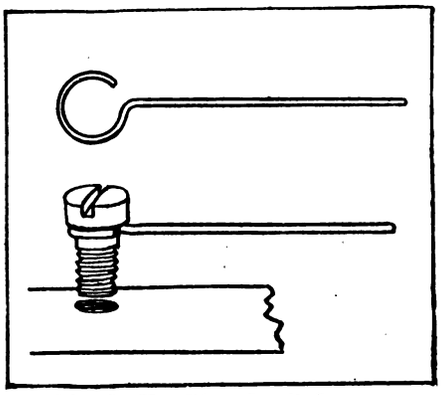

Fig. 8—Handling Small Screws.

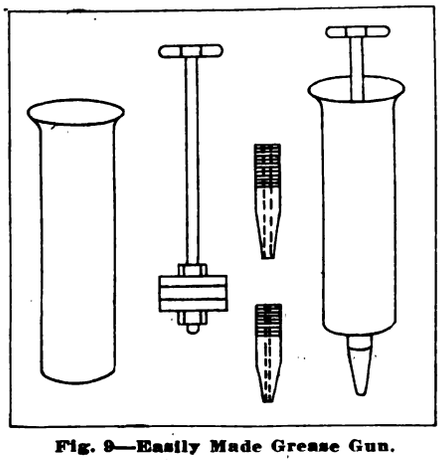

Fig. 9—Easily Made Grease Gun.

GREASE GUN.
(Figure 9.)

A grease gun suitable for putting grease into transmission boxes, differential housings or steering gear casings, may be easily made from an old automobile foot pump, so-called. The first thing to do is to remove the brass shell or tube and out of this cut a piece about 12 inches long. Thread the inside of one end to take a solid piece of old brass about an inch or so thick, having one face flat and the other concave and having a ⅝ hole drilled through its centre. Thread this hole to take the snouts, which are to be turned up approximately as shown and having holes drilled through their centre to suit the grade of grease you expect to use. It is well to have two or three of these holes, varying from ⅛ inch up. These are turned taper form for convenience and threaded to fit into the base of the gun as stated. The other end of the shell is rolled over as a plumber rolls over lead pipe to make a butt joint. This facilitates the entrance of the plunger into the gun. For the plunger use the one that came out of the pump, replacing the old washer with a thicker one if necessary. The handle should be made smaller, or a more convenient one put on the rod, which should be cut to such a length as to project conveniently from the gun when pressed way down. To use the gun it is only necessary to remove the plunger and stick the tube or shell into the grease upside down when, upon withdrawal, it will be found to be filled. By using the snouts of different diameter holes this gun may be used for light or heavy grease or oil as desired. Not being enclosed and coming apart so readily it is easily filled and cleaned and being of brass will not rust or corrode.

HOME MADE PIPE WRENCH.
(Figure 11.)

It often happens that when one most needs a certain tool it cannot be found, which case calls for a substitute. When the stilson wrench is mislaid, a substitute device can be provided by placing an S wrench of a size that will slip easily over the round piece to be turned, as shown in the sketch. Between the jaw and pipe insert a flat file so that a fairly tight fit is obtained. Pressure upon the wrench will bind the file against the work and the wrench jaw so that the piece can be turned easily.

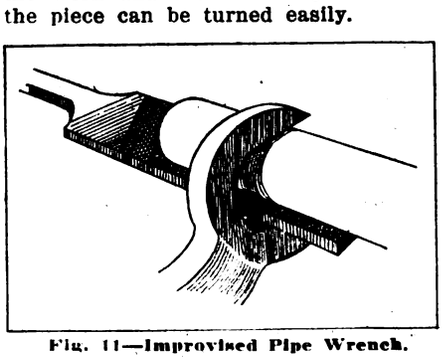

Fig. 11—Improvised Pipe Wrench.

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Trade Information Exchange A National Clearing House for the Trade's Needs

GASOLINE PLEASURE CARS.

San Francisco, Cal.; The DuBroy Motor Company is interested in gasoline pleasure cars; selling price, $1000 to $1500.

Pittsfield, Mass.; The Berkshire Motor Sales Company, 119 West street, wishes to secure the agency for gasoline pleasure cars; selling price, $600 to $1600.

Nashville, Mich.; Jo Hurd is in the market for gasoline pleasure cars; selling price, $450 to $800.

Clarion, Penn.; F. Sloan McComb is anxious to secure gasoline pleasure cars; selling price, $395 to $3000.

Spokane, Wash.; G. M. Ross, 1012 Sprague avenue, wants to obtain gasoline pleasure cars; selling price, $1000 to $2500.

GASOLINE COMMERCIAL CARS.

Audubon, Ia.; Johnson & Buck are interested in motor trucks.

Pittsfield, Mass.; The Berkshire Motor Sales Company, 119 West street, wishes to secure the agency for gasoline commercial cars; selling price, $700 to $2000.

Nashville, Mich.; Jo Hurd is in the market for gasoline commercial cars; selling price, $450 to $750.

Syracuse, N. Y.; H. Barcroft White Corporation is interested in gasoline commercial cars selling at a low and medium price.

Ardmore, Okla.; The Patterson Motor Company, A. street, N. W., is desirous of securing the agency for gasoline commercial cars; selling price, $750 to $1450.

McAlester, Okla.; The Cruther Automobile Sales Company is in the market for gasoline commercial cars; selling price, $500 to $1000.

Clarion, Penn.; F. Sloan McComb is interested in gasoline commercial cars; selling price, $395 to $3000.

Spokane, Wash.; G. M. Ross, 1012 Sprague avenue, wants to obtain the agency for gasoline commercial cars; selling price, $1000 to $3500.

ELECTRIC COMMERCIAL CARS.

Gilman, Ill.; Albert Lenz is interested in electric commercial cars; selling price, $500 to $1200.

SPECIAL OPPORTUNITY.

Boston, Mass.; Spangler Tubbs Motor Company, 388 Newbury street, is interested in winter tops for Metz cars.

Stone Harbor, N. J.; The Central Garage (John E. Larson) would like pleasure car agencies in Cape May County, N. J.; also interested in concerns that deal in the garage line.

ACCESSORIES AND EQUIPMENT.

Miami, Ariz.; Ford Garage, West Sullivan street, is interested in charging apparatus, shock absorbers, starters and special bodies for pleasure and commercial cars.

San Francisco, Cal.; The DuBroy Motor Company is interested in air pumps, bumpers, dimmers, recording time clocks, wire wheels and special bodies for pleasure cars.

Gilman, Ill.; Albert Lenz wants air compressors, air pumps, anvils, autogenous welding equipment, boilers, cabinets, cases, charging apparatus, cranes, elevators, hammers, lathes, maps, rectifiers, turntables, vises, washstands and special bodies for pleasure and commercial cars.

Cambridge City, Ind.; H. & M. Auto Parts Company is in the market for air pumps, belts, grinders, lathes, oils, printed matter and mill supplies. The products are to be used for manufacturing auto parts.

Grand Rapids, Ia.; William J. Large, 241-243 Bond avenue, N. W., wishes to secure gasoline, greases, oils, tire accessories, tires, wash stands.

Louisville, Ky.; Holatt Brothers, 401 Inter-Southern building, is interested in charging apparatus, presses.

Bangor, Me.; Sawyer-Newman Motor Company wants carburetors, steering wheels.

Boston, Mass.; Spangler Tubbs Motor Company, 388 Newbury street, is anxious to secure batteries, bodies, bolts, bulbs, bumpers, carburetors, chains, coils, connectors, cranes, dimmers, drills, fire extinguishers, gaskets, glass, goggles, hammers, headlights, horns, hose, ignition, jacks, lamps, locks, magnetos, mechanical starters, mufflers, nuts, patches, pedals, pins, pistons, platinum, plugs, printed matter, pullers, pumps, punches, reamers, reflectors, screws, searchlights, shock absorbers, speedometers, springs, starters, steering wheels, storage systems, tape, terminals, tire accessories, tires, tools, tops and parts, valves, vises, vulcanizers, washers, waste, wearing apparel, windshields, wire, wrenches and special bodies for pleasure and commercial cars. The goods are to be used for Metz cars and service station.

Pittsfield, Mass.; The Berkshire Motor Sales Company, 119 West street, wants information regarding air pumps, batteries, carburetors, charging apparatus, dimmers, gasoline, greases, horns, mechanical starters, motors, oils, rheostats, storage systems, vulcanizers, waste, wrenches. The products are to be used for sales.

Nashville, Mich.; Jo Hurd is interested in anti-rattlers, autogenous welding equipment, batteries, bodies, bolts, bulbs, coils, commutators, dimmers, drills, fire extinguishers, nuts, paints, pinions, pistons, plugs, races, reamers, recording time clocks, shock absorbers, speedometers, starters, timers, tire accessories, tires, wheels.

Niles, Mich.; William Schulte is interested in air pumps, charging apparatus, lathes.

Syracuse, N. Y.; H. Barcroft White Corporation wants bumpers, charging apparatus, cranes, gasoline, hydrometers, jacks, lathes, plugs, polishes, pulleys, pumps, searchlights, soaps, speedometers, turntables, vises, waste, wrenches.

Columbus, O.; McIntyre Manufacturing Company is in the market for gears, motors, radiators, removers (carbon), tanks, tools. The products are to be used in the manufacture of farm tractors.

Ardmore, Okla.; The Patterson Motor Company, A street, N. W., is desirous of securing autogenous welding equipment, greases, oils and special bodies for commercial cars.

McAlester, Okla.; The Cruther Automobile Sales Company is interested in belts, bulbs, hydrometers, platinum, soaps, solder, turntables.

Clarion, Penn.; F. Sloan McComb wants air compressors, air pumps, anti-rattlers, autogenous welding equipment, axles, banding, batteries, bodies, bolts, brakes, brushes, bulbs, bumpers, burners, cabinets, carbide, carburetors, cases, chains, charging apparatus, clutches, cups, cushions, cylinder machines, cylinders, dashes, dimmers, discs, doors, drills, drums, dynamometers, dynamos, elevators, emblems, engines, fans, fasteners, fenders, fire extinguishers, furnaces, gaskets, gasoline, gauges, greases, goggles, graphite, grinders, guards, guns, greases, hammers, headlights, heaters, hoists, horns, hose, hubs, hydrometers, ignition, indicators, injectors, jacks, knuckles, lamps, lathes, leather, levers, locks, lubricators, machinery, magnetos, maps, mechanical starters, metal parts, meters, measuring instruments, motors, mufflers, nuts, oils, packing, paints, pans, patches, pedals, pinions, pins, pistons, platinum, plugs, polishes, presses, primers, printed matter, pullers, pumps, punches, radiators, ratchet drills, reamers, rectifiers, reflectors, regulators, removers (carbon), rims, rubber, recording time clocks, scrapers, screws, searchlights, seats, separators, shims, shock absorbers, soaps, sockets, solder, speedometers, spokes, springs, stampings, starters, steel, steering wheels, steps, storage systems, strainers, switchboards, switches, tanks, tape, terminals, testers, timers, tire accessories, tires, tools, tops and parts, transmission, trunks, tubing, turntables, upholstery, valves, vaporizers, varnishes, ventilators, vises, voltmeters, vulcanizers, wheels, windshields, wire, wrenches and special bodies for pleasure and commercial cars.

Memphis, Tenn.; The Tennessee Auto Sales Company, Thomas avenue and Driving Park, is interested in axles (rear worm), frames, springs, universal joints. The products are to be used for trucks.

Spokane, Wash.; G. M. Ross, 1012 Sprague avenue, is anxious to secure bodies, bulbs, cloth (seat covers), emblems, gear cutting machines, ignition, lathes, machinery, storage systems, tire accessories, tools. The goods are to be used for garage service.

Chesaning, Mich.; Berman, Perrott & Stewart are interested in charging apparatus for use in the garage.

Overly, N. D.; L. E. Gray is in the market for air compressors, air pumps, anti-rattlers, asbestos, autogenous welding equipment, batteries, bearings, belts, bodies, boilers, brushes, bulbs, bumpers, cable, camshafts, cans, carburetors, cements, chains, charging apparatus, clips, coils, collars, comutators, cones, cranes, cylinder machines, drills, dynamometers, dynamos, engines, fans, fenders, fire extinguishers, gaskets, gears, generators, grinders, greases, headlights, hoists, hydrometers, ignition, jacks, jigs, lamps, lathes, machinery, magnetos, meters, measuring instruments, motors, nuts, oils, patches, pins, pistons, platinum, plugs, polishes, presses, primers, printed matter, punches, races, radiators, reamers, rods, scrapers, screws, searchlights, shafting, shims, shock absorbers, sockets, starters, steel, storage systems, switchboards, switches, terminals, testers, timers, tire accessories, tires, tools, valves, vaporizers, vises, waste, whistles, windshields, wrenches, also storage battery charging outfit. The products are to be used for the garage and repair shop.

Columbus, O.; A. F. Hieronimus, Jr., 171 North Fourth street, is anxious to secure air compressors, storage systems, waste.

Houston, Tex.; Steele-Leslie Company wants belts, bodies, bulbs, bumpers, charging apparatus, coils, special bodies for pleasure and commercial cars.

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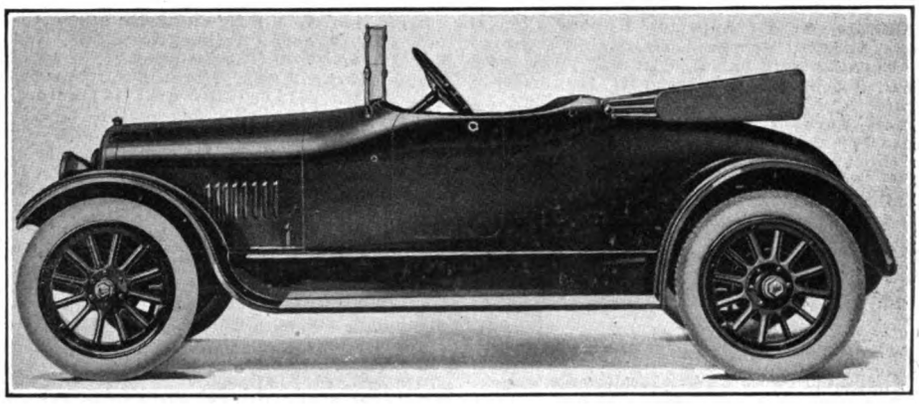
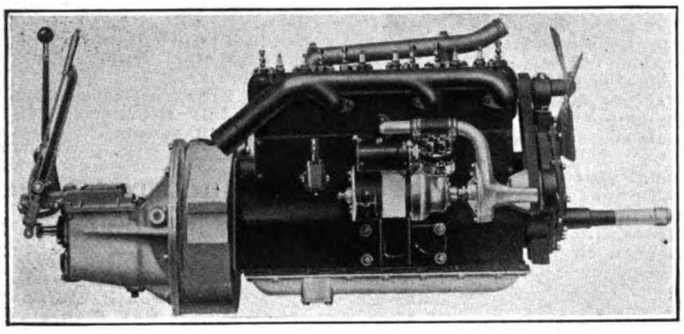
Pilot Has But One Chassis Model for 1917.

The Pilot Six-Forty-Five is Manufactured by the Pilot Motor Car Company, Richmond, Ind., and Sells for $1150—Complete Description of Mechanism and Bodies in Automobile Journal, Dec. 10, 1916.



Pilot's "Get Chummy" Roadster.



Six-Cylinder Unit Power Plant.

OUTSTANDING FEATURES OF THE CHASSIS.

Motor, L head, en bloc.	Fuel feed, vacuum.
Bore and stroke, 3¼x5.	Starting and lighting, Delco.
Horsepower (S. A. E.), 23.44.	Clutch, disc dry plate.
Lubrication, splash pressure.	Gearset, sel., unit, motor.
Cooling, circulating pump.	Rear axle, full floating.
Ignition, Delco H. & A.	Wheelbase, 119 inches.
Carburetor, special.	Tire sizes, 32 by four.

NEW CONCERNS RECENTLY INCORPORATED.

Monthly Record of New Business Houses for which Charters Have Been Issued In the Various States and Classified According To Nature of Business.

Dealers In Automobiles and Motor Trucks.

Bridgeport, Conn.; Raybestos Company; $500,000; to make motor cars and accessories; S. Simpson, L. V. Simpson, H. G. Farwell.

Chicago, Ill.; The Hudson Sales Company; $10,000; Walter H. Eckert, Warren B. Buckley, P. L. Nelson.

Indianapolis, Ind.; The Irvine-Fessler Motor Corporation; $25,000; motor car directors; Dennis J. Bush, Robert V. Fessler, John Irvine.

Lafayette, Ind.; Fowler Auto Company; $5000; C. R. Rhyan, D. J. Harrington, E. M. Watson, L. C. Redinbo, J. A. Douglas.

Portland, Ind.; The Hudson-McConochy Company; $10,000; to deal in automobiles; S. E. Hudson, L. W. Hudson, Homer McConochy.

Lawrence, Mass.; Sugden Automatic Automobile Company; $30,000; Lawrence Sugden, Frank H. Woodcock, John C. Haughton, Alton M. Hatch, Asa J. Kenerson.

Worcester, Mass.; Putman & Washington Company; $10,000; to do an automobile business; Henry D. Winton, Clifford D. Winton, Frederick L. Putnam.

St. Paul, Minn.; Security Mortgage Company; $1,000,000; to finance the sale of trucks and motor cars on the payment plan; J. N. Storr, A. Hirschman, N. P. Rogers, G. N. Michaud.

Springfield, Mo.; Brownlow-Aurand Motor Car Company; $10,000; Joseph W. Brownlow, James H. Hedges, Charles F. Aurand.

Trenton, N. J.; Modern Aeros Corporation, Ltd.; $100,000; to manufacture horseless vehicles, motors and engines.

Brooklyn, N. Y.; Slocum Motor Service, Inc.; to deal in autos and to conduct a garage; J. M. Ott, P. J. Mahoney, A. H. Tag.

Buffalo, N. Y.; Lafayette Auto Funeral Company, Inc.; $3000; Peter Roll, Frank L. Hoffman, John Murset.

New York, N. Y.; F. U. Motor Car Corporation; $105,000; Herbert A. Blumenthal, Walter Winston, Richard Winston.

New York, N. Y.; Moswell Manufacturing Company; $5000; to deal in automobiles and electrical specialties and accessories; N. Bernknopf, D. Weller, L. Moskowitz.

New York, N. Y.; Westinghouse Convertible Auto Corporation; $100,000; to deal in automobiles, motors, engines and supplies; J. H. Cardon, A. C. Dam, J. S. Zelaya.

New York, N. Y.; A. B. Woythaler; $5000; Emanuel E. Kleiner, Samuel D. Lasky, Albert B. Woythaler.

Rochester, N. Y.; Parker-Rishor Sales Company, Inc.; $1000; James L. Rishor, Loren O. Graves, Harry G. Rice.

Bellefontaine, O.; The Bellefontaine Auto Company; $1000; E. P. Humphreys, P. E. Powell, William H. Hamilton, John P. Atkin, Alfred J. Miller, I. N. Zearing, Chester E. Allen, L. E. Marquis.

Cleveland, O.; Blake Motor Trucking Company; $50,000; R. W. Blake.

Cleveland, O.; Garwood Motor Car Company; $40,000; Robert H. York.

Cincinnati, O.; The Cincinnati National Sales Company; $10,000; to deal in automobiles; Charles Hemmer, Thomas E. Byrne, William J. Bryne, James B. O'Donnell, Walter C. Taylor.

Dayton, O.; The St. Clair Auto Company; $10,000; George L. Baker, Edward E. Burkhart, Frank R. Baker, Joseph G. Michel, W. H. Baker.

Pittsburg, Penn.; Warrington Auto Car Company; $10,000; H. F. Thomas, Ralph H. Frank, Bruce Harrison, E. W. Allison, R. C. Mason.

Nashville, Tenn.; Stockell Motor Car Company; $35,000; to engage in motor car business; W. F. Stockell, Jr., Louis Tillman, G. N. Tillman.

Accessories, Equipment and Supplies.

Dover, Del.; Esmeralda Oil Corporation; $1,000,000; J. T. McGovern, J. G. Gregg, Alva Collins.

Dover, Del.; The Hilliard Manufacturing Company; $50,000; to manufacture accessories and specialties for motor vehicles.

Wilmington, Del.; World's Automobile and Furniture Polish Manufacturing Company; $60,000; to manufacture polish of all kinds for use on automobiles.

Canton, Ill.; The Gordon Tire and Rubber Company; $600,000.

Springfield, Ill.; Peoria Auto-Kot Company; $3000; to manufacture "auto-kots;" Gerald H. Page, John W. Winzeler, George T. Page.

Chicago, Ill.; Englewood Tire and Supply Company; $5000; F. F. Symonds, John H. Cadmus, Oliver H. Starrett.

Wichita, Kan.; Wizard Auto Lite and Supply Company; $4000; George H. Bassett, J. H. Travis, J. E. Cook.

Portland, Me.; Automobile Equipment Company; $50,000; F. M. Derrah, A. B. Brewer, H. P. Sweetser.

Lynn, Mass.; Metallic Auto Tire Company; $500,000; to manufacture a new style of automobile tire, invented and patented by Mr. Szeltz; A. O. Szeltz president.

Millbury, Mass.; Millbury Rubber Company; $90,000; De Forest E. Martin, president; Albert W. Blackmer, treasurer.

St. Louis, Mo.; Turner Tire Company $13,000; to manufacture vehicle tires; F E. Turner, Charles Neimeyer, N. W. McLeon, H. V. Stevens, S. T. G. Smith.

Trenton, N. J.; Deltire Rubber Company; $25,000; Alexander Trapp, John R. D. Bower, Catherine P. Hornyak.

Bronx, N. Y.; North Side Battery and Electric Company, Inc.; $10,000; John F. Hanudel, John A. Hanudel, L. M. Hanudel.

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Buffalo, N. Y.; Superior Rubber Company; $25,000; George J. Hagmaier, Anaby V. Purnell, William E. Standely, Edward Heer, Joseph Porzel, Elmer H. Hagmaier, Frank A. Abbott.

New York, N. Y.; The Houdaille Shock Absorber Company, Inc.; $10,000; to deal in shock absorbers and auto accessories; E. H. Rushmore, J. K. Vanvranken, P. V. Clodio.

New York, N. Y.; Kip Vulcanizing Company, Inc.; $1000; to repair tires; B. Franklin Klass, Kenneth A. Palmer, William T. Weidenman.

New York, N. Y.; Public Service Tire and Rubber Company of New York; $100,000; to manufacture tires for autos and rubber goods; R. Krause, G. H. Empey, T. A. Anderson.

Rochester, N. Y.; Christman Tire Company, Inc.; $2000; Jacob K. Christman, Arthur W. A. Brewster, Clayton R. Brown.

Rochester, N. Y.; L. P. Ross Company, Inc.; $25,000; to deal in rubber and leather goods; William H. Porter, Henry B. Hubbard, George H. Mayo.

Cincinnati, O.; The Conejos Rubber Company; $100,000; Edward D. Woodward, C. F. Albrecht, Madison P. Holland, Eugene Schmidt, Frank Kirk.

Cincinnati, O.; Dixie Auto Supply Company; $5000; L. R. Wise, B. S. Butterfield.

Coshocton, O.; The Ben-Hur Tire and Rubber Company; $10,000; W. P. Horton, Jr., J. S. Culp, Thomas Brennen, Herbert P. Laurence, M. B. Glore.

Dayton, O.; The Auto Safety Light Company; $10,000; George F. Deady, Carrie M. Deady, George F. Holland.

Toledo, O; Erie Auto Engineering Company; $10,000; to deal in motor car accessories; John H. Yonker, Finely Kemp, J. C. McFellim, William Rentschler, W. S. Thurstin, Jr.

Toledo, O.; The Beacon-Lite Auto Signal Company; $7000; Paul R. Harsh, Edward Yeager, Mary Yeager, Clara S. Harsh, Ulysses F. Baker.

Beaumont, Tex.; Quick Tire Service Company; $5000; F. Atkin, Alex Feigleson, Charles T. Butler.

Houston, Tex.; Texas Motor Equipment Company; $10,000; J. W. Cain, F. H. Littrell, Ben B. Cain.

Seattle, Wash.; Washington Tire Company; $7500; C. H. Magnussen, Phil G. Duvall.

Leechburg, Penn.; Kiski Auto Supply Company; $25,000; Aaron Gingler, H. T. Cook, U. O. Heilman, C. F. Armstrong, D. S. McCallum, J. W. Crosby, T. E. Jones, H. E. Brace, J. Lees, O. C. Neely, Fred Hill.

Parts and Fittings Makers Incorporated.

Hartford, Conn.; Ennis Auto Top Company; $25,000; to manufacture auto tops and auto parts; E. C. Ennis, E. L. Ennis, E. S. Fenning, E. M. Finning.

New London, Conn.; Interstate Machine Products Company, Inc.; $50,000; to deal in lubricators, automobile parts, specialties; Frederick C. Buckley.

Peoria, Ill.; Kerosene Motor Company; $100,000; to sell internal combustion motors, motor parts and all kinds of motor car parts; E. H. Smith, George McFarland, Frank H. Bush.

Cambridge City, Ind.; H. & M. Auto Parts Company; $10,000; to deal in auto parts; O. E. Huddleston, Clifford J. Marson, Charles J. Marson.

Kokomo, Ind.; The Periscope Spark Plug Company; $50,000; F. W. Shideler, E. C. Pierson, W. E. Pierson.

Augusta, Me.; Granlund Motors Corporation; $1,000,000; L. J. Coleman, M. F. Hearin, E. C. Carll, E. B. Turner.

Holyoke, Mass.; The Canney Motor Company; $25,000; George J. Canney, Willard H. Lovell, Clifford H. Weldon.

Jefferson City, Mo.; Harry Newman, Inc.; $10,000; to deal in automobile and motor car parts and accessories; Harry Newman, Samuel V. Newman, Charles F. Levy.

Brooklyn, N. Y.; Newland-Delaney Motors, Inc.; $10,000; Arthur Newlands, Ned B Bidison, Arthur W. Delaney.

New York, N. Y.; Moreton Carburetor Corporation; $10,000; to deal in motors, carburetors, engines and boats; J. McEvoy, R. A. Stemm, D. A. Pearson.

New York, N. Y.; Thomas A. Troy, Inc.; $5000; to deal in automobile parts, hardware supplies; G. E. Fieldmann, N. J. Cowles, T. A. Troy.

Wilmington, N. Y.; Carr Road-Tour Motor Company; $500,000; to manufacture automobiles.

Akron, O.; The Akron Universal Motor Company; $10,000; R. G. Class, John A. McAlonan, G. W. Kans, W. E. McCue, G. B. Metz.

Cleveland, O.; The Disbrow Motors Company; $25,000; Louis Disbrow, W. D. Callman, Morris Becker, Mark L. Fisher, A. B. Crowell.

Milwaukee, Wis.; Burnell Fuel Saver Company; $10,000; to manufacture carburetor auxiliaries and similar appliances; Albert A. Giese, Alfred J. Meims.

Reading, Penn.; Dunmore Manufacturing Company; to manufacture machinery or parts for automobiles, motor vehicles or parts, gears, gear wheels, tools and similar articles.

Boston, Mass.; National Safety Lift Company, Inc.; $50,000; Gerome B. Norton, Marie R. Norton, W. Howard Pope.

Rye, N. Y.; Motor Needs, Inc.; $5000; Arthur A. Alexander, George M. Alexander, Herbert A. Cone.

Newly Organized Manufacturers of Cars.

Dover, Del.; United Automobile Stores, Inc.; $25,000; to manufacture automobiles and supplies; William F. O'Keege, George G. Stiegler, E. E. Wright.

Dover, Del.; Ultra Truck Corporation; $200,000; to manufacture and repair automobiles; Karl Robert Peters, Joseph B. McNanly, Jennie C. Smyser.

Chicago, Ill.; Commercial Vehicle Motors Company; to manufacture automobiles and motors.

St. Louis, Mo.; D. C. L. Selling Corporation; $6000; to manufacture and sell automobiles and other vehicles; E. F. Oakley, Jr., William Logan, Walter Meller.

St. Louis, Mo.; Northern Motor Company; $6500; to manufacture and deal in automobiles and motor car parts; Charles Moench, Lena B. Krite, Alma M. Whittaker.

Albany, N. Y.; Walden W. Shaw Corporation; $1,100,000; to manufacture motor cars, aeroplanes and taxis; Richard P. Lydon, R. L. Redfield, Luke V. Albert.

New York, N. Y.; Faye & Graves, Inc.; $100,000; James J. Faye, Robert Graves, Jr., George M. Burditt.

New York, N. Y.; The Se-Lum Manufacturing Corporation; $100,000; Stephen Oderwald, Rose A. Chenka, Henry M. De Sulykowsky.

Parkersburg, W. Va.; Lawrence Motor Company; $5000; to manufacture motor vehicles; J. W. Lawrence, D. O. Jones, W. M. Bennett, T. P. Kennelly, T. Miller.

New York, N. Y.; Moswell Manufacturing Company, Inc.; $5000; Louis Moscowitz, David Weller, Nathan Bernknopf.

Garages and Repair Shops Newly Chartered.

Chicago, Ill.; Randolph Garage and Motor Company; Richard O. Thompson, Thomas O. Thompson, Arthur A. Levisohn.

Brooklyn, N. Y.; Abbott Garage, Inc.; $10,000; M. D. Nale, D. M. Cahill, E. M. Fettes.

Glen Falls, N. Y.; Cadillac Service Company, Inc.; to conduct a garage and to deal in automobiles; J. F. Finch, G. L. Williams, G. C. Walker.

New York, N. Y.; Atlas Service, Inc.; $405,000; to conduct a garage and to deal in automobiles; G. F. Jebbett, T. S. Buckingham, A. M. Vandervoort.

New York, N. Y.; Highbridge Garage Company, Inc.; $10,000; to conduct a garage and to deal in automobiles; J. S. Hanckel, L. A. Vanbomet, G. W. Alger.

New York, N. Y.; Marseilles Garage Company, Inc.; $10,000; J. Sidney Bernstein, Joseph Bernstein, Henriette Weinberger.

Rochester, N. Y.; South Park Garage, Inc.; $2500; Bertha Hodgkinson, Edward Lynn, Florence Pfaff.

Reno, Nev.; Olympic Garage Company; $100,000; R. W. Poole, W. E. Pruett, J. W. Burrows.

Akron, O.; Service Auto and Machine Company; $2500; to operate a garage and repair shop; James Daugherty, Albert A. Smyers, E. D. Whorley, Raymond Roderick, B. J. Amer.

Philadelphia, Penn.; Ratledge Livery and Garage Company; $20,000; to conduct a general livery and garage business; Ernest B. McNair, James R. Ratledge, William G. Jones, Jr.

Pittsburg, Penn.; Uptown Garage Company; $5000; Morris Weiner, Samuel Wolfson, E. D. Stewart.

New York, N. Y.; Brown's Garage Company, Inc.; $10,000; Lily Braunstein, Annie Margulies, Louis Rasenson.

Unclassified Incorporations Recently Made.

Iowa City, Ia.; Stephens Auto Distributing Company; $10,000; Owen P. Murphy, C. McCauley, A. C. Moyer, Ray Blakesley.

Lake Charles, La; The Lake Charles Motor Company; $10,000; to conduct a motor sales agency; J. W. Tooke, president; T. H. Bedsole, vice president; R. L. Bray, secretary and treasurer.

Boston, Mass.; Outing Shoe Company; $200,000; Joseph A. Manning, J. Nelson Manning, Edward A. Manning.

Buffalo, N. Y.; William M. Coon, Inc.; $10,000; William M. Coon, Grace M. Coon, Francis A. Coon.

Bronx, N. Y.; Heitmann Auto Service, Inc.; $500; John Heitmann, Anna Heitmann, Adelaide M. Eggers.

New York, N. Y.; Car Owners' Service Corporation; $10,000; Gussie Suss, Pearl Englander, Paul Englander.

New York, N. Y.; International Flexible Coupling Company, Inc.; $10,000; to deal in automobile accessories; L. R. and F. M. Pratt, W. A. Kitts, Jr.

New York, N. Y.; Monti & Scanlon Taxi Company, Inc.; $2000; F. E. Monti, Lizzie R. Monti, J. Scanlon.

New York, N. Y.; Morgan Taxicab Company, Inc.; $1000; Joseph G. Gohen, Julius Kendler, Max Kendler.

New York, N. Y.; National Motor Company and Vehicle Corporation; $500,000; to take over the National automobile factory at Indianapolis, Ind.; A. C. Newby, president; William Gray Wall, vice president; George M. Dickson, secretary-treasurer and general manager.

New York, N. Y.; Gr. Weinberg and Al. Posner Engineering Company, Inc.; $25,000; exporting and importing autos, hardware and other merchandise.

Tulsa, Okla.; The Automobile Protective Association; $5000; J. G. Sanders, Donald D. Lamond, B. F. Reynolds.

Tulsa, Okla.; Forster-Lukins Auto Company; $50,000; F. W. Lukins, J. T. Foster, Charles Lukins.

Youngstown, O.; Universal Service Company; $10,000; to take over the agency and repair shop at 751 Elm street; A. B. Calvein, Joseph D. O'Connell, H. F. Black, L. A. Leavitt, C. E. Crowthers.

Dover, Del.; Car Road-Tour Motor Company; $500,000; to manufacture automobiles and supplies; Ferris Giles, K. M. Dougherty, L. S. Dorsey.

New York, N. Y.; American B. H. P. Aero Engine Corporation; $25,000; D. Bailey, J. S. Fiske, George L. Strong.

New York, N. Y.; Premo Auto Top and Painting Company, Inc.; $1000; Louis Weinberger, Jacob Weinberger, George Lambert.

New York, N. Y.; W. J. Company, Inc.; $15,000; James H. Rancor, William J. Foster, R. T. Sadler.

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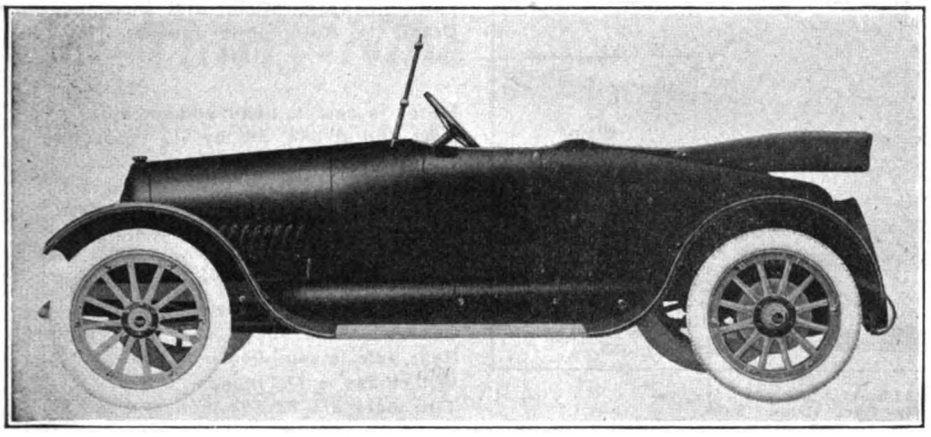
The Dolly Madison Six-Cylinder Roadster.



Dolly Madison Four-Passenger Roadster.

The four-passenger, six-cylinder Dolly Madison roadster announced by the Madison Motors Corporation, Anderson, Ind., makes five models in the present series of Madison cars, all six-cylinder "jobs," and ranging in price from $1050 to $1250. The new roadster sells for $1150. Its wheelbase is 120 inches and it has a 40 horsepower Rutenber, 3⅛ by five-inch engine. Other features are the Remy electric starting and lighting installation and the full floating rear axle with Brown-Lipe nickel steel spiral gears. The wheels carry 34 by four-inch tires, rough tread on the rear set. The body is painted in mouse gray and has black fenders and red wheels.

NEW BUSINESS CONCERNS AND CHANGES OF NAMES.

The Month's Record of Transfer of Ownerships and Opening of Garages, Agencies, Branches, Service Stations and Repair Shops.

Recent Transfers of Business Ownerships.

Bay Menette, Ala.; W. C. Slaughter has purchased the garage business on Hoyle avenue, which was formerly conducted by Hall Brothers Taxi Company. He will for the present conduct a repair shop and keep a supply of automobile accessories.

Sacramento, Cal.; S. W. Ford has purchased the interest of J. Jori in the Oak Park Garage.

Chicago, Ill.; Maxwell Auto Sales Company has changed its name to Kenmood Motors Company.

Rock Island, Ill.; T. B. Totten has purchased the Totten Auto Company of 1708 Third avenue, and will conduct the business as a service garage and taxicab line.

Ottumwa, Ia.; Raymond Knight has purchased the interest of Rass Vass in Vass & Knight Garage. He will be the proprietor.

Sag City, Ia.; J. J. and R. E. Mangold have purchased the garage owned by Fred C. Stearns.

Washington, Ia.; Roy Fetters has purchased and taken possession of the garage on West Madison street, known as the Motor Inn.

Waukon, Ia.; The Wernham Garage has been sold to Len J. Harthell for $18,000.

Barnard, Kan.; The Patrick Garage, formerly owned by Frank Patrick, has been sold to Jess Venard.

Louisville, Ky.; Louisville Tire Company has changed to the name of the Metcalfe-Ericson Motors Company.

Bangor, Me.; Neil E. Newman has sold his interest in the Sawyer-Newman company to his partner and has taken the agency for the Velie car.

Calumet, Mich.; Floyd Bulbord has purchased the storage battery supply station formerly owned by Herbert Busch.

Grand Rapids, Mich.; Field Motor Company has bought the Brown & Schler factory, Ann street and Turner avenue, for $14,000.

Holly, Mich.; Charles Herrick and G. Berton Goodrich have purchased the Holly Garage and have taken possession. They will continue the Ford agency.

Albert Lea, Minn.; The Broadway Auto Company has been formed by T. M. Gabby and John Olson and will open a garage in the Green building.

Glencoe, Minn.; The C. S. Vjota Implement Company has bought the S. E. Mills Garage and will conduct the business.

Moberly, Mo.; The J. T. Williams Garage on West Rollins street has been purchased by Newton Hinton and Earl Hinton. They will take active charge of the business.

Littleton, N. H.; The Littleton Garage Machine Company has been sold to Herbert H. Downing.

Marion, O.; David B. Ashton has purchased the garage of the Marion Automobile Company, located on North Prospect street.

Toledo, O.; Abbott-Grandy Motor Company have dissolved partnership. A. M. Abbott will handle trucks, specializing in the Denby truck. C. B. Grandy will handle pleasure cars and will also act as distributor for the Dixie Flyer under the name of the Grandy Motor Sales Company. The business will be continued at 1010 Madison avenue.

Chickasha, Okla.; Tom Wolverton has purchased the garage and automobile supply business of J. A. Corzine & Son.

Pittsburg, Penn.; The Jackson Motor Company has taken over the Landon Baum building and will erect a new modern garage and auto supply house.

Scranton, Penn.; The Ackerman Automobile Company has purchased the livery stable building at the corner of Church and Banks street for $20,000.

Williamsport, Penn.; Glosser Motor Car Company has been formed to take over the agency for the Oakland cars. S. A. Glosser is head of the company.

Wheeling, W. Va.; The Loe Auto Company, distributor for Ford cars, has been purchased by George W. Weimer and Charles H. Waddell. The firm has changed its name to Weimer & Waddell, Inc. The new company will take the agency for the Oldsmobile cars.

Fond du Lac, Wis.; The Frost Tire Company, located at Main and Western avenues, has been taken over by J. S. Kugler, who will conduct the business.

Rib Lake, Wis.; William Koege has purchased the garage, supply store and shop of George F. Braum and will continue the business of Koege's service station.

New Business Locations and Removals.

Ft. Smith, Ark.; Ward-Harris Auto Company, 10th and C streets, is now located at 101 North 19th street.

Modesto, Cal.; F. E. Smith has moved his offices and sales rooms to 922 Ninth street. He is an Overland and Jeffery dealer.

San Francisco, Cal.; Auto Radiator Works, 1586 Bush street, has moved to 5004 California street.

Oakland, Cal.; Byard L. Tully has opened a new garage at 4506 East 14th street, which will be operated as the Tully Garage.

Hartford, Conn.; William A. Beck has removed his Overland service department to the new brick garage at 134 Albany avenue.

Chicago, Ill.; Ford Supply Company, 3021 S. Michigan avenue, has moved to 1408-10 Michigan avenue.

Chicago, Ill.; General Vehicle Company is now located at 1621 South Michigan avenue. The company was formerly located at 10 La Salle street.

Chicago, Ill.; Graham Automobile Company, 1233 Michigan avenue, has moved to 536 Forest avenue, Oak Park, Ill.

Decatur, Ill.; Peck & Byrne, local Saxon dealers, have moved to 1151 North Water street.

Fowler, Ind.; The Auto Service Company has removed to the Dixon & Co.'s Garage. The quarters are larger for its business.

Grand Rapids, Ia.; William J. Large has moved into the old Tim Kelley livery barn at 65 Bond avenue, N. W., and has remodeled the barn into a storage garage.

Louisville, Ky.; Stanley Auto Company has moved to 181 Burnett street. The company was formerly located at 766 Jackson street.

Springfield, Mass.; W. F. Cassidy has moved to 48 Willow street. He is a Grant dealer.

Lowell, Mass.; The Burgess Motor Company has removed to the Park Garage, 832 Middlesex street. This company has the local agency for both the Saxon and McFarlan cars.

Springfield, Mass.; The Harrington-Gif-

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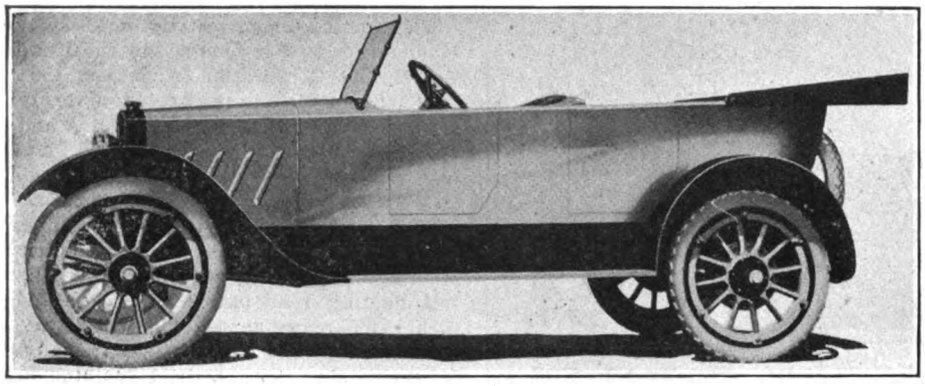
Features of the Hackett Four-Cylinder Model.



The Four-Cylinder Hackett Car, Price $888.

Made by the Hackett Motor Car Company, Jackson, Mich., and Described in Detail in Automobile Journal, Nov. 25, 1916.

Motor is cast L head and en bloc.
Bore and stroke, 3¾ by 4¼ respectively.
Horsepower by S. A. E. rating 22.5.
Lubrication is force feed and splash.
Cooling is by thermo-syphon system.
Ignition, Remy coil and distributor.
Carburetor make is the Justrite.
Starting and lighting, Dyneto make.
Clutch, G. B. S., single driven disc.
Gearset, three speed, sel., unit, motor.
Rear axle is semi-floating type.
Wheelbase is 112 inches.
Tire sizes are 32x3½ inches, Ajax.

ford Company has moved into new sales room. The company has the agency for the Hudson.

Springfield, Mass.; The Western Massachusetts Longford Company has moved into new sales and service building.

Worcester, Mass.; Metz Company, 711 Main street, is now located at Waltham, Mass.

Escanaba, Mich.; A. F. Kreplin has moved his business to 1110 Terrace avenue. He will do a general storage and repair business.

St. Louis, Mo.; Brown-Hall Supply Company, 1124 Pine street, is now located at 1515 Pine street.

St. Paul, Minn.; The B. F. Goodrich Company, 215 W. Sixth street, is now located at 215 W. Fifth street.

St. Paul, Minn.; The Northern Motor Car Company has taken quarters at 380 West Seventh street. The company has the agency for Republic trucks. It is under management of G. D. Wilcox.

Atlantic City, N. J.; People's Garage, 2720 Atlantic avenue, is now located at 100 N. Chelsea avenue.

Elizabeth, N. J.; Franklin Auto Company, 644 Franklin street, has moved to 299 Central avenue, Newark, N. J.

Allegany, N. Y.; Allegany Garage has moved to 105 Brissle street, Oil City, Penn.

Fairport, N. Y.; John Street Garage, 31 John street, is now located at 45 Superior street, Rochester, N. Y.

New York, N. Y.; The Kline Motor Car Company has moved into new quarters in the New York American building, Columbus Circle.

Troy, N. Y.; Hudson Valley Auto Agency, 543 River street, is now located at 2359 Fifth avenue.

Cincinnati, O.; West End Auto Repair Company is now located at 1045 Pine street. The company was formerly located at 1006 Richmond street.

Cleveland, O.; Barger Auto Company, 1915 E. 13th street, has moved to 1101-5 Clifton boulevard.

Cleveland, O.; Cook & Pace, 2127 W. 100 street, is now located at 1963 West 99th street.

Toledo, O.; The Meyer Auto Repair Company has moved into a new home at 2224 Jefferson avenue.

Alva, Okla.; The Alva Storage Battery Company, located at 413 Barnes avenue, has become a Willard service station.

Ardmore, Okla; The Patterson Motor Company has removed from West Main street to A street, N. W. The building was formerly occupied by Tom Cooper as a garage.

Philadelphia, Penn.; D. Walter Harper Company, 2547 N. Carlisle street, is now located at 1130 Westmoreland street.

Philadelphia, Penn.; Keystone Auto Supply Company, 2730 N. Broad street, has moved to 808 Commonwealth building.

Pittsburg, Penn.; South Side Garage, 92 S. 13th street, is now located at Craig and Center avenues.

Pittsburg, Penn.; Warner Instrument Company, has moved to 5913 Center avenue. The company was formerly located at 301 Craig street.

Providence, R. I.; Lewis' Garage, 258 Waterman avenue, is located at 258 Waterman avenue, East Providence, R. I.

Providence, R. I.; Pope Hartford Auto Company, Inc., of Rhode Island, 773 Broad street, is now located at 69 Olive street.

Knoxville, Tenn.; Knoxville Auto and Garage Company, 522 State street, has moved to Charlotte, N. C.

Nashville, Tenn.; The Southern Motor Sales Company has moved its sales rooms to 1229 Broadway, formerly occupied by the Briscoe-Oakland company.

Richmond, Va.; Daner Brothers have moved to new quarters on West Broad street and will sell the Rush truck.

Agencies, Dealers and Service Stations.

Birmingham, Ala.; The White Motor Company has opened at 1912 Fourth avenue. It is equipped with modern machinery. E. S. Craig has become local manager.

Berkeley, Cal.; The Butter-Veitch Company, 2352 Shattuck avenue, has been appointed distributor for the Denmo trucks.

Fresno, Cal.; L. A. Bobo will conduct a Willard service station at 1228 K street.

Hartford, Conn.; R. H. Bryan, who recently sold his store on Main street to Murphy Brothers, will enter the automobile field. He has secured the agency for Saxon cars.

Tampa, Fla.; Southern Tire Company has opened an establishment at 207 Franklin street.

Austin, Ill; The Brook Sales and Service Station will handle the Ford cars at 5519 Madison street.

Musatine, Ia.; The Horst & Strieter Company has opened a new service department. The firm will also maintain a repair shop in connection with its sales room.

Des Moines, Ia.; The Universal Motor Company has opened a sales room at 906 Walnut street. The concern has distribution of Ford cars and will handle Ford parts and accessories.

Lawrence, Kan.; The Butler-Sanderson Motor Company has opened a new sales room at 11-13 East Ninth street.

Pittsfield, Mass.; The Berkshire Motor Sales Company, distributor for the Saxon and Paige cars, has secured sales rooms at 119 West street. A large stock of both makes of cars are displayed.

Pittsfield, Mass.; Brewer Brothers have opened sales rooms at 141 West street. The concern has the agency for the Reo and Locomobile cars.

Buffalo, N. Y.; The Toal Auto Supply Company has opened a service station at 1458 Main street.

Charlotte, N. C.; The Firestone Tire and Rubber Company opened a new branch Dec. 1 at 222 North Tryon street. The building has been remodeled and is modernly equipped. H. C. Buchanan of the Atlanta branch is managing the business.

Pawhuska, O.; The Auto Supply and Sales Company has been organized to handle automobile supplies and to do all kinds of repairing.

Providence, R. I.; The National Sales Company has been organized to handle the National.

Memphis, Tenn.; The 416 Tire and Vulcanizing Company has taken the agency for Tireoid tires and will open a service station at Marshall and Union avenues.

Ripon, Wis.; R. J. Nellis has opened a storage battery service station on the second floor of the Rippon Auto Company's garage, Jackson street.

Garages and Repair Shops Newly Chartered.

Miami, Ariz.; Ford Garage on West Sullivan street has opened for business. The new garage is one of the largest and best equipped machine shops in Miami.

Stockton, Cal.; A. S. Reed has opened a repair shop at 16 North Aurora street. He is the inventor of a grease retainer for Ford cars.

Meriden, Conn.; Charles Walker has completed a new garage on North Cherry street.

Richland, Ga.; The Rylander Automobile Company has opened a garage which is to be conducted as a Ford service station.

Kirwin, Kan.; Cogswell Motor Company has erected a garage 85 by 100 feet. The structure contains a shop measuring 18 by 100 feet.

Pepperhill, Mass.; Walter Sherwood has opened a garage and repair shop.

Hayward, Minn.; Gust Newberg & Sons have opened a garage.

Marietta, O.; W. H. Lorentz has opened a new garage at 203 Greene street. He will handle Maxwell cars.

Toledo, O.; J. D. Reed has opened a gas station and garage at Lawrence avenue and Monroe street.

Thomas, Okla.; Stokes & Langston has opened a garage opposite the Eureka restaurant.

Memphis, Tenn.; The Tennessee Auto Sales Company has opened a repair and plant shop at 251 Monroe avenue and will sell used cars and Ameston trucks.

Richmond, Va.; The Atlantic Auto and Accessory Company has opened a service and repair station in a remodeled building at 808 West Broad street. The company will sell the Velie and Inter-State.

Hayward, Wis.; Gust. Moberg & Sons has opened a new garage and repair shop in the Whistler building.

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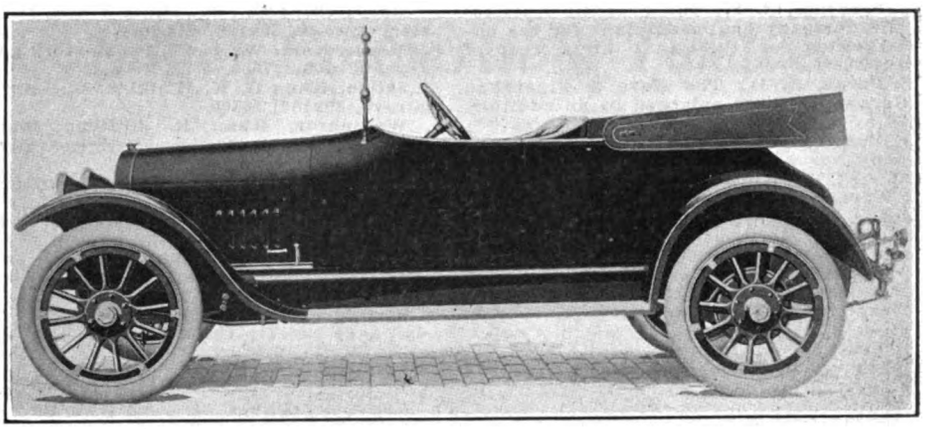
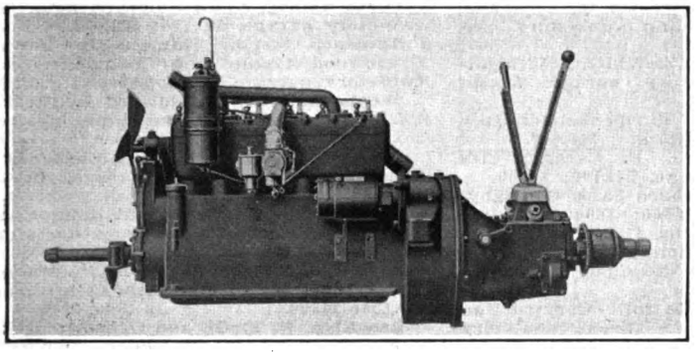
Construction of The Auburn Six-Thirty-Nine

Manufactured by the Auburn Automobile Company, Auburn, Ind., Which Also Makes for 1917 Another Six-Cylinder Chassis, Model Six-Forty-Four. Price of the Six-Thirty-Nine, $1185. Complete Description in Automobile Journal, Dec. 10, 1916.



Auburn Tete-Tete 6-39 Roadster Model.



Left Hand Side of 6-39 Auburn Engine.

Motor, L head, block.	Starting and lighting, Remy.
Bore and stroke, 3¼x5.	Clutch, disc.
Horsepower (S. A. E.), 23.44.	Gearset, 3 speed, unit, motor.
Lubrication, splash.	Rear axle, full floating.
Cooling, centrifugal pump.	Springs, semi-elliptic.
Carburetor, Rayfield.	Wheelbase, 120 inches.
Fuel feed, vacuum.	Tire sizes, 34x4 F. & R.
Ignition, Remy, H. & A.	Wheels, wood, standard.

DECEMBER'S RECORD OF NEW BUILDING PLANS.

Contracts Made and Plans Contemplated for Alterations or the Building of Garages, Repair Shops, Service Stations and New Plants.

Factories, Garages and Repair Shops.

New Haven, Conn.; J. R. Kennedy will erect a garage at 251 Dwight street. It will be two stories and modern in every way.

Springfield, Ill.; W. W. Beard and J. A. Thornborrow will open a garage, having purchased the livery barn of H. J. Cramer, which will be remodeled.

Rockford, Ill.; The Rockford Overland Company is erecting a sales and service station on North Church street.

Butler, Kan.; John Exxes is building a garage.

Salina, Kan.; Newsom Brothers are erecting a garage.

Waldo, Kan.; Bean & Miller are erecting a 100 by 75 foot garage.

Portland, Me.; Myerson & Schwartzman are having a big garage erected.

Rockland, Mass.; Charles W. Briggs is building a 50 by 80 foot garage, with machine shop in the rear.

Springfield, Mass.; The H. J. Perkins Company is erecting a 60 by 139 foot garage.

Worcester, Mass.; J. Francis Southgate will erect a two-story reinforced concrete garage at 747 Main street.

Auburn, Mich.; Wallace Grimm is erecting a repair shop, 30 by 60 feet.

Grand Rapids, Mich.; James F. Knowleton is building a garage which will cost $6000.

Minneapolis, Minn.; H. L. Whitted and E. W. S. Yeakes are building a $20,000 garage, two stories high, at 1208-10 Harmon place.

Owatonna, Minn.; C. P. Anders is erecting a large garage, 44 by 90 feet, at Bridge and Oak streets.

St. James, Minn.; Schoffman & Crowley are building a garage.

St. Paul, Minn.; Waldref Motor Car Company will build a garage at Pleasant avenue and Third street for Pierce-Arrow car sales and service.

Milford, N. H.; Joseph Finnerty is erecting a large garage.

Toledo, O.; The Grasser Motor Company will erect a garage at 1617 Madison avenue at a cost of $24,500.

Philadelphia, Penn.; J. Egnal is building a garage, 60 by 150 feet, at 52nd street and Wyalusing avenue, at a cost of $12,000.

Wayne, Penn.; Hale Motor Company will erect a garage.

Olneyville, R. I.; The William Hughes Company is erecting a $35,000 garage.

Gary, S. D.; M. D. Griffing will build an automobile shed, 40 by 60 feet, with a concrete floor.

Cameron, Tex.; The Chambers Auto Supply Company will erect a two-story brick garage, 60 by 110 feet.

Richmond, Va.; Davis & Child are building a garage.

Allen, Wis.; Welke Brothers will build a cement block garage and repair shop, 40 by 42 feet.

La Crosse, Wis.; The Elsen & Philips Auto Company, 110 South Second street, is building a new garage and service station, 100 by 140 feet, two stories and basement, of fireproof construction. It will cost about $25,000.

Milwaukee, Wis.; The Standard-Racine Rubber Company, Oneida and Jefferson streets, Milwaukee, Wis., will build a new tire and accessory store at Astor street and Juneau avenue.

Alterations, Improvements and Additions.

Hartford, Conn.; The Capitol City Auto Company has completely remodeled the sales room at Allyn and High streets, which was recently damaged by fire.

Hartford, Conn.; The Palace Auto Service Company, 348 Trumbull street, has remodeled the second floor.

Chicago, Ill.; Guarantee Auto Sales Company, 325 East 21st street, has moved to 2712 Michigan street.

Carneiro, Kan.; John Ulrickson is enlarging his garage.

Elkridge, Kan.; R. C. Day is rebuilding his garage, which was destroyed by fire.

Lewiston, Me.; Lewis L. Levasseur is enlarging his garage by a 50x100 foot addition.

Springfield, Mass.; The Becker Automobile Company has enlarged its quarters at 160 Chestnut street. This was made necessary by increased business.

Grand Rapids, Mich.; Michigan Hearse and Motor Company is building an addition to its plant at Union avenue, S. E., and the Pere Marquette railroad. The addition will be 100 by 60 feet.

Beach, N. D.; Tony Kreitinger has completed additions to the Motor Inn.

Buffalo, N. Y.; The Main Street Development Company is erecting large additions to the building on Main street, which is occupied by Hudson, Chalmers and McFarland agencies.

Plattsburg, N. Y.; The Cadillac Garage on Margaret street is to have a second story.

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Syracuse, N. Y.; The Franklin Automobile Company has made plans for the enlargement of the plant at a cost of $1,000,000.

Fargo, N. D.; The Hoye & Figenskau Garage has been enlarged by an addition, 20 by 80 feet.

Eugene, Ore.; Sweet-Drain Auto Company has added a one-story unit, 40 by 80 feet, to its garage.

Cedarburg, Wis.; The Wittlin Garage is being lengthened 70 feet, making it 40 by 140 feet. Most of the additional space will be used for a repair shop.

Marshfield, Wis.; William Paape has completed work on the remodeling and modernizing of the garage and repair shop.

Viroqua, Wis.; Dahl's Ford Garage is being remodeled and enlarged to provide a larger repair shop, a new stock room, offices and a separate sales room.

Contemplated Plans and Specifications.

Texarkana, Ark.; A. J. Kizer, 308 Vine street; two-story, 50x140; first floor to contain sales room, 35x50. Lessee, Dryer Motor Sales Company.

Denver, Col.; Adam Rittmeyer; one-story garage, 49x125; $5000.

Denver, Col.; Jesse E. Fleming, 101 Broadway; two-story garage, 50x150; $20,000.

Hartford, Conn.; Allen M. Isaac; three-story garage, 57x56.

Waterbury, Conn.; H. S. Coe; two-story garage, 40x105; $6000.

St. Petersburg, Fla.; George W. Hanlon; concrete block garage and repair shop, 110x40; $5000.

Champaign, Ill.; C. A. Carlson, 419 N. Neil street; one-story public garage, 44x100; $7000.

Chicago, Ill.; A. Scarlata, 480 W. 26th street; one-story private garage, 45x50; $3000.

Chicago, Ill.; M. H. Callner, 123 W. Madison street; one-story public garage, 50x109; $15,000.

Chicago, Ill.; Frederick A. Anders; one-story public garage and show room, 100x110; $25,000.

Chicago, Ill.; J. E. Scheller, 4654 Cottage Grove avenue; one-story garage, 35x38; $2500.

Chicago, Ill.; Robert N. Fair, 2222 Calumet avenue; three-story automobile sales building, 100x192; $100,000. Lessee, Louis Geyler & Co., 2500 S. Michigan avenue.

Chicago, Ill.; M. Clamitz, 4113 W. Madison street; one-story public garage, 99x108; $18,000. Lessee, Arthur Clamitz.

Chicago, Ill.; H. Lempe, 3621 Byron street; one-story garage, 125x110; $20,000.

Chicago, Ill.; William Newman & Co., 19 N. Curtis street; one-story garage and machine shop, 28x62; $25,000.

Decatur, Ill.; A. H. Deysdale, 200 W. Main street; three-story garage, 82x150; $30,000.

Lake Forest, Ill.; Clayton Mark, 2610 West 25th place, Chicago; two-story garage, 25x56; with wing, 25x30.

Monticello, Ill.; George I. Rudisele; one-story public garage, 90x100; $7000.

Quincy, Ill.; Dick Brothers' Brewing Company; one-story garage, 33x103; $6000.

Robinson, Ill.; Robinson Motor Car Company; two-story garage, 47x112; $15,000.

Fort Wayne, Ind.; Weber & Gale; one-story public garage, 100x150; $35,000. Lessee, Motor Sales Corporation, 700 Clay street.

Fort Wayne, Ind.; Don H. Harns, 3230 Webster street; one-story public garage, 44x150.

La Fayette, Ind.; Murdock Realty Company, 505 South Fifth street; two-story public garage and sales room, 77x132; $25,000.

Des Moines, Ia.; W. F. Ghornley, 600 S and L. building; two-story public garage, 40x127; $7000.

Sioux City, Ia.; Hanford Produce Company, 611 Main street; two-story private garage, $10,000.

Marysville, Kan.; Travelute & Son; two-story garage, 60x122; $16,000.

Meade, Kan.; Willis Wolf; one-story garage, 50x100; $7000.

Salina, Kan.; G. K. Hudkins; one-story garage, 50x100; $6500.

Wellington, Kan.; R. J. Renn; four-story garage, 50x140. Lessee, Harmar Motor Company.

Louisville, Ky.; Park Realty Company; one-story brick garage; $6500.

Madisonville, Ky.; W. J. Dulin; one-story garage, 60x150.

Shreveport, La.; Dickinson Sales and Garage Company; display room and service station, 110x140; $50,000.

Portland, Me.; Lancaster & Libby, 11 Exchange street; three-story public garage, 118x62; $20,000.

Baltimore, Md.; Buick Automobile Agency, 21 East North avenue; garage and sales room, 65x200.

Baltimore, Md.; Smallwood Garage; one-story garage, 85x245; $20,000.

Baltimore, Md.; American Oil Company, 1110 American building; one-story garage, 30x64; $3000.

Baltimore, Md.; E. S. White, 2552 Madison avenue; one-story garage, 50x80; $4000.

Baltimore, Md.; E. E. Openheimer, Law building; one-story garage; $10,000.

Baltimore, Md.; G. E. Carazzo, City Hall; one-story garage, 54x100; $4000.

Salisbury, Md.; Auburn Sales Company; fireproof garage, 40x100; $8000. To install machinery costing $1000.

Boston, Mass.; Emery Wilkins, Old South building; one-story public garage, 150x40; $20,000.

Boston, Mass.; Carroll Construction Company, 11 Elmdale street; one-story public garage, 60x167.

Everett, Mass.; Mrs. L. F. Murray, 623 Kimball building, Boston; one-story public garage, 50x125.

Lawrence, Mass.; John W. Barrett, 228 Park street; one-story garage, 40x79; $5000.

New Bedford, Mass.; Samuel T. Lee, 399 Summer street; one-story garage, 22x125; $3000.

Norwood, Mass.; J. Lewis; one-story public garage, 108x45.

Chesaning, Mich.; Berman, Perrott & Stewart; one-story garage and display room, 100x130.

Detroit, Mich.; A. Cooper, 1318 Gratiot avenue; one-story public garage, 47x83; $6000.

Detroit, Mich.; Packard Motor Car Company; one-story garage, 54x185; $10,000.

Flint, Mich.; Bruce J. MacDonald, 221 E. Fifth street; one-story public garage, 66x192; $25,000.

Grand Rapids, Mich.; E. E. Shackleton, Elddecomb building; one-story garage, 50x100; $10,000.

Grand Rapids, Mich.; A. Boer; one-story garage; $10,000.

Kalamazoo, Mich.; Gunton & Jessop, 5 E. Water street; one-story garage, 75x189; $15,000.

Minneapolis, Minn.; M. E. Berry; one-story garage, 80x100; $10,000.

Minneapolis, Minn.; Henry Dahlmann, 1411 E. Franklin avenue; one-story garage, 50x140.

Virginia, Minn.; Nels Anderson; one-story garage, 100x109; $30,000.

Centralia, Mo.; A. R. Tolson; one-story garage, 46x120; $8000.

Joplin, Mo.; Junge Baking Company; two-story garage, 38x60; $12,000.

Kansas City, Mo.; R. T. Rommie, 15th and Montgall street; two-story garage, 65x100; $30,000.

St. Louis, Mo.; Stephen Motor Company, 4432 Olive street; two-story auto sales room and shop, 50x115; $15,000.

St. Louis, Mo.; M. McNichol, 5618 Easton avenue; one-story public garage, 50x120; $7000.

St. Louis, Mo.; Buideau Realty Company, 713 Chestnut street; one and two-story auto supply building; $20,000.

Berlin, Neb.; W. H. Irland; one-story garage, 46x120; $8000.

Holdrege, Neb.; Ralph E. Kiplinger; one-story garage, 75x80; $8000.

Lincoln, Neb.; L. E. Evans; two-story garage, 34x54; $2000.

Lincoln, Neb.; Frank Du Teil, 1020 O street; two-story garage, 50x42; $25,000.

Omaha, Neb.; Edgar H. Scott, 3623 Jackson street; two-story garage, 57x132; $15,000.

Portsmouth, N. H.; C. A. Lowd; one-story public garage, 44x110; $10,000.

Atlantic City, N. J.; Breakers Hotel, care Charles A. Myers, 2213 Atlantic avenue; one-story garage, 50x90; $8000.

Belleville, N. J.; Enterprise Realty Company, 237 Fulton avenue, Jersey City, N. J.; one-story public garage, 50x100; $6000.

Montclair, N. J.; John Swenson; one-story garage, 75x100; $12,000.

Newark, N. J.; William Lueddeke, 99 Monroe street; one-story public garage, 100x102; $7500.

Newark, N. J.; Mrs. Rose Gelb, 229 Livingston street; one-story public garage, 30x70; $4000.

Newark, N. J.; Jacob Kaplan, 185 Livingston street; one-story garage, 29x75; $3500.

Perth Amboy, N. J.; Union Garage, Inc.; two-story garage, 59x100; $25,000.

Trenton, N. J.; Edward C. Bowen, Greenwood avenue and Chamber street; two-story garage, 60x75; $8500.

Weehawken, N. J.; Edward Reilly, 363 Park avenue; one-story public garage, 25x50; $3000.

Albany, N. Y.; William R. Shafer, 675 Central avenue; one-story garage, 20x124; $10,000.

Brooklyn, N. Y.; Newport Building Company, 435 Rockaway avenue; one-story garage, 100x100; $18,000.

Brooklyn, N. Y.; S. S. Losee, 235 Monroe street; one-story automobile sales room, 40x100; $6500.

Brooklyn, N. Y.; M. and G. Construction Company, Inc., 924 Broadway; one-story garage, 86x100; $10,000.

Brooklyn, N. Y.; George Garszra 144 N. Fifth street; one-story garage, 53x100; $9000.

Brooklyn, N. Y.; E. M. Pilzer Cut Stone Company; one-story garage, 150x100; $30,000.

Brooklyn, N. Y.; Pohl Abbott Construction Company, 1264 Ocean avenue; one-story public garage, 100x106; $12,000.

Brooklyn, N. Y.; J. J. Spinelli, 233 Broadway, New York City; two-story public garage, 75x100; $15,000.

Brooklyn, N. Y.; Rudolph Norek, 1102 Eastern Parkway; one-story garage, 60x100; $20,000.

Brooklyn, N. Y.; Dickey & Lemberg Company, Suffern, N. Y.; one-story garage and repair shop, 100x95; $7500.

Brooklyn, N. Y.; McKay Brothers, 193 Hamilton avenue; one-story public garage, 66x80; $10,000.

Brooklyn, N. Y.; Benjamin Waltman, 601 Howard avenue; one-story public garage, 60x95; $11,000.

Brooklyn, N. Y.; Benjamin and Philip Tarshoff, 474 Warwick street; one-story garage, 106x106; $12,000.

Brooklyn, N. Y.; P. Schwartz, 801 Manhattan avenue; one-story garage, 30x100; $8000.

Brooklyn, N. Y.; Harry Triebitz, 1734 Pilkin avenue; one-story garage, 50x180; $12,000.

Jamaica, L. I., N. Y.; Jamaica Auto Supply Company, 449 Fulton street; one-story garage, 60x93; $8000.

New York, N. Y.; Christian Wollerson, 514 W. 46th street; two-story automobile service station, 80x100. Lessee, Stern-Picard Company.

New York, N. Y.; George W. Drote, 207 W. 137th street; one-story garage, 75x90; $10,000.

Utica, N. Y.; Frank Dellecese, 511 Bacon street; one-story garage and storage station, 80x80; $5500.

Watertown, N. Y.; Harbor Inn, C. J. Purdy, proprietor; one-story garage, 32x160; $12,000.

Cincinnati, O.; J. Clay Simms, 2643 Coleraine avenue; one-story public garage, 50x100; $7000.

Cincinnati, O.; Stanton Robinson, 326 Purcell avenue; one-story public garage; $15,000.

Columbus, O.; Central Auto Vehicle Company, 242 N. Fourth street; two-story garage and sales room, 182½x31½.

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Lorain, O.; Black River Telephone Company; one-story garage, 30x50; $8000.

Warren, O.; Rudolph Kunz, 640 Nimrod avenue, Youngstown, O.; one-story garage and salesroom, 50x100; $9000.

Chickasha, Okla.; V. A. Dunham and W. E. Whitaker; brick and concrete garage, 50x100; machine shop, 25x100.

Oklahoma City, Okla.; W D. Caldwell; one-story garage, 100x140; brick and steel trussed; $16,000.

Oklahoma City, Okla.; A. Kroutel; one-story garage, 50x130; $5500.

Pawhuska, Okla.; J. C. Ferguson & Sons; brick garage and sales room; fireproof roofing, concrete floors, natural gas heating, electric lighting.

Yukon, Okla.; M. H. Boss; one-story garage, 50x150; $7000.

Berwick, Penn.; A. R. Beagle and G. E. Tollmer, 1232 Front street; one and two-story garage, 45x60; $5000.

Bethlehem, Penn.; Francis Donegan, 507 East Third street; one-story garage, 40x140; $7000.

Coatesville, Penn.; Norris B. Slack & Son, 10 N. Walnut street, West Chester, Penn.; two-story public garage, 53x140; $25,000.

Summore, Penn.; T. F. O'Hara, 242 Pine street; one-story garage, 36x80; $6000.

Hollsopple, Penn.; H. H. Casler, First National Bank building; two-story commercial garage, 46x90; $9000.

Lancaster, Penn.; H. B. Landis, 541 N. Pine street; one-story garage, 100x60; $4000.

Newport, R. I.; R. H. Stacy; one-story public garage, 40x80; $5000.

Providence, R. I.; William Bloom, 200 Dudley street; two-story garage and repair shop; $4000.

Gainesville, Tex.; Cheancy Bros.; two-story brick garage; $20,000.

Tazewell, Va.; L. A. Tynes; two-story garage, 63x138; $12,000.

Tazewell, Va.; Star Motor and Machinery Company; 62x114; brick walls, steel beams, short joist, composition roof, concrete and wood floors, steam heat, electric lighting, freight elevators; $15,000.

Charleston, W. Va.; Mathews Storage Company, 600 Capital street; one-story garage, 50x145; $6000.

La Crosse, Wis.; Eisen & Phillips; 110 South Second street; two-story garage, 100x142; $20,000.

Milwaukee, Wis.; F. Biegelaar, 573 E. Water street; one-story garage, 45x100; $8800.

Milwaukee, Wis.; Herman J. Stoltz, 1531 Wells street; one-story garage, 50x53.

Milwaukee, Wis.; Charles Netzow, 34 Prospect avenue; two-story private garage, 25x30.

Milwaukee, Wis.; Angor Engineering Company, 303 16th street; one-story garage, 120x130; $20,000.

New London, Wis.; New London Motor Company; one-story garage, 46x80; $5000.

Shawano, Wis.; Nate Howe; one-story garage, 50x117; $7000.

Wanwatosa, Wis.; Kamschulte & Webster, American Bank building; two-story garage and chauffeur's quarters, 21x21; $2000.

Douglas, Wyo.; Wiker & Slichtas; two-story garage, 50x120; $10,000.

New Contracts Recently Awarded.

Gadsden, Ala.; W. H. Maben; one-story brick garage, 125x75; for L. B. and S. T. Billingsley and J. T. Lankford.

Stamford, Conn; O'Connor Concrete Construction Company; one-story garage, 55x100; for Royal I. Lockwood; $5000.

Downers Grove, Ill.; Downers Grove Stock Company, 58 Forest avenue; one-story garage, 50x138; $10,000.

Atlantic, Ia.; Koebel & Jensen; one-story garage, 50x140; for J. Kaplan; $15,000.

Fort Madison, Ia; George A. Spencer, 623 Fifth street; one-story garage and repair shop, 28x110; for A. N. Anthes, 813 Second street; $9000.

Everett, Mass.; David Platt, 41 Johnston road, Boston; one-story public garage, 55x100; for Moses Richmond, 18 Tremont street, Boston; for $10,000.

Pepperell, Mass.; C. H. Miller; one-story garage, 50x50; including L 23x70; for Robert Smellie.

Quincy, Mass.; W. R. Lafgren, 16 Cottage street; one-story public garage, 52x80, for Maria Dipanfilo, 208 Washington street; $5000.

Worcester, Mass; Joseph E. Gironard, 339 Main street; one-story garge, 35x53; for Joseph A. Loothkoss and John Buersch; $4200.

Winona, Minn.; Madsen Construction Company, Plymouth building, Minneapolis, Minn.; two-story commercial garage for S. L. Prentiss; $30,000. Lessee, Winona Motor Company.

Kansas City, Mo; G. W. Wilkey, 1301 Oak street; one-story garage, 38x122; for Jennie B. Tyree, 1211 McGee street; $3500.

Morristown, N. J.; George Fraser, 20 Exchange place, New York, N. Y.; two-story garage, 22x65; $7000.

West Hoboken, N. J.; Charles W. Wyckoff, 722 De Bois street; one-story garage, 50x116; for New Jersey Express Company, 628 Central avenue; $5000.

Albany, N. Y.; R. P. Sewell & Son, 540 Hudson avenue; one-story garage, 42x86; for John F. Brady, 100 State street; $5000.

Brooklyn, N. Y.; Martin S. Walsh, 332 Felix street; one-story garage, 50x100; for Frederick W. Zimmer, 541 Greene avenue; $10,000.

White Plains, N. Y.; Frank N Goble, 1 E. 42nd street; 1¼-story garage, 75x50; for Thomas Simpson; $25,000.

Cincinnati, O.; M. Marcus Building Company, 2023 Reading road; two-story auto service station, 18x44; for E. M. Kahn; $15,000.

Philadelphia, Penn; John P. Fallon; one-story brick garage, 19x35; at 6195 Larchwood avenue; for Napoleon Wood; $2500.

Philadelphia, Penn.; Henry C. Dahl; two-story stone garage, 42x24; north side Wynnefield avenue, west of 52nd street; for Richard C. Chwoerer; $5000.

Philadelphia, Penn.; J. J. Kehoe; one-story brick garage, 50x50; at 1705 North 56th street; for Mulville & Kehoe; $1000.

Philadelphia, Penn.; A. L. Elliott; one-story brick and stone garage, 29x89; southeast corner Yocum and 61st streets; $1600.

Philadelphia, Penn.; Alfred James; 42.8x23.3; northeast corner Moreland avenue and Towanda street; for T. H. Warthman; $5500.

Philadelphia, Penn.; Conneen Construction Company; one-story brick garage, 45x80; at 1427-29 North Bowvier street; for J. Cochran; $6000.

Philadelphia, Penn.; Harry Drake; one-story brick garage, 30x162; at 1133 East Columbia avenue; for Edwin Lentz; $6100.

Philadelphia, Penn.; Sylvester M. Peters; one-story stone, brick and metal garage; 58.6x19; rear 3630 North Fifth street.

Philadelphia, Penn.; John H. Dagney; brick garage, 60x115; north side Spencer street, west of York road, for Matthew Donnelly; $8860.

Philadelphia, Penn.; P. J. Kilcullen; one-story brick garage, 50x17; north side of A street, east of Ross street; $1200.

Philadelphia, Penn.; William R. Dougherty; four-story garage, 42x50, at 705-7 South Philip street; for Sklaroff & Son.

Philadelphia, Penn.; L. W. Kitselman; one-story brick garage, 100x20; at 6825 Germantown avenue; for Andrew Knopf; $4000.

Philadelphia, Penn.; J. Y. Lonx; two-story brick garage, 42x115; at 1714-16 Venango street; for J. Hillard; $8000.

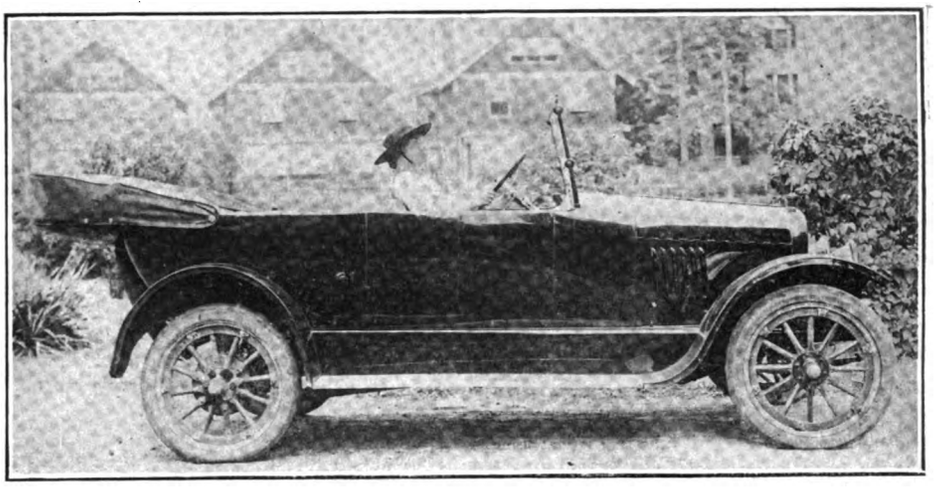
Providence, R. I.; Eastern Engineering and Contracting Company, Southbridge, Mass.; one-story private garage, 74x84; for Mexican Petroleum Corporation, 164 Allen avenue, Woonsocket, R. I.; $10,000.

Charlottesville, Va.; E. H. Parrish, box 452; two-story garage and supply station at E. Second and Water streets; 42x82; $15,000.

Norfolk, Va.; Nichols & Lindermann; brick and concrete garage at 242 Bank street; $4800.

Wellsburg, W. Va.; Wellsburg Garage and Livery Company; J. W. Lank and V. S. Wells, 97 Eighth street; fireproof garage, 55x55; $7500.

Enger Convertible Twelve.



The Enger 1917 Six-Twelve Touring Car, Manufactured by the Enger Motor Car Company, Cincinnati, O., and Priced at $1295. Described in Detail in Automobile Journal, Oct. 25, 1916.

Motor, 12-cylinder, V block.
Bore and stroke, 2⅜x3½.
Horsepower (S. A. E.), 27.07.
Lubrication, force feed.
Carburetor, Stromberg.
Fuel feed, gravity.
Ignition, Remy.
Starting and lighting, Westinghouse.
Clutch, dry plate multiple disc.
Gearset, 3 speed, unit, engine.
Rear axle, full floating.
Wheelbase, 116 inches.
Tire sizes, 32 by 4, F. & R.
Six Cylinders can be run separately.

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AGENCIES RECENTLY APPOINTED.

Add to and Correct Your Mailing List—Symbol * Indicates Commercial Vehicle, † Electric, and ‡ Agricultural Tractors.

ALABAMA.

Tuscaloosa—Saxon, The Ward Motor Car Co.

CALIFORNIA.

Eureka—King, D. H. McFarland, Fifth and I streets.
Long Beach—King, E. A. Green.
Velie, Kostelecky Bros., 240 American avenue.
Los Angeles—Bour-Davis, The I. H. Stratton Co.
Liberty, Pacific Motor Corporation.
Velie, The Lord Motor Car Co.
Westcott, The I. H. Stratton Co.
Pasadena—Monroe, Godell & Brooke, East Colorado street.
Riverside—Moon, The Smith Motor Car Co., 446 Eighth street.
Sacramento—Moon, The Hartman Motor Sales Agency.
San Diego—Grant Six, J. A. McCadhon.
San Francisco—Moon, The Hartman Motor Sales Agency.

COLORADO.

Colorado Springs—Haynes, The Strang Garage Co.
Ft. Collins—Maxwell, The Ft. Collins Motor Co.
*G. M. C., The Halliday Motor Company.
Kremmling—Dodge, The Northwest Mercantile Co.
Velie, The Northwest Mercantile Co.

DISTRICT OF COLUMBIA.

Washington—Madison, National Auto College.

FLORIDA.

Apalachicola—Oldsmobile, E. S. Wefing.
Jacksonville—Dort, Cameron-Barkley Co., Main and Orange streets.
Hupmobile, Cameron-Barkley Co., Main and Orange streets.
Mitchell, Cameron-Barkley Co., Main and Orange streets.
*Selden, Cameron-Barkley Co., Main and Orange streets.

GEORGIA.

Augusta—Paige, Harper & Davidson.
Barnesville—Oldsmobile, J. W. Carrider.
Camilla—Oldsmobile, Drake & Thompson.
Ocilla—Oldsmobile, J. W. Paulk Auto Co.
Pelham—Oldsmobile, Drake & Thompson.

IDAHO.

Anthony—King, W. L. Campbell.
Atkinson—Oldsmobile, B. F. Clark.
Georgetown—Oldsmobile, R. J. Miethe.
St. Anthony—King, W. L. Campbell.
Twin Falls—King, Wright & Reese.

ILLINOIS.

Chandleville—Dort, Emery Carter.
Elgin—Saxon, The Treiber Motor Company, 105 Grove avenue.
Lincoln—Dodge, N. S. Ong, Hayes Garage, North Logan street.
Marion—Hupmobile, The Lewis Auto Sales Co.
Medora—Oakland, J. W. Delapp.
Pekin—Ford, J. F. Conaghan.
Peoria—*Koehler, Verklin-Curless.
Rockford—Wadsworth, A. W. Robertson.
St. Anne—Overland, W. A. Guertin.
Springfield—Moon, Johannes Bros.

INDIANA.

Columbia—Chevrolet, Brand & Outcelt.
Indianapolis—Saxon, O. N. Frazier and Earl O'Blenness.
Kokomo—Saxon, The Dickey Motor Car Co.
Marion—Elgin, W. A. Cool.
Rising Sun—Oldsmobile, Edward Detner.
Terre Haute—Saxon, J. E. Sayre & Co., 329-331 Ohio street.

IOWA.

Cedar Rapids—Dodge, J. W. Smith Motor Co.
Council Bluffs—Oldsmobile, Soper Blair Motor Co., Eighth and Broadway.
‡Nilson, C. W. McDonald.
Creston—Saxon, J. W. McNees, West Mills street.
Des Moines—Dort, Meredith Motor Car Co.
*Hercules, Meredith Motor Car Co.
Menlo—Oldsmobile, Wilson Brotners.
Sibley—Oldsmobile, Pulcher Eilders Co.
Vail—Oldsmobile, E. Brockley & Co.

KANSAS.

Great Bend—Oldsmobile, F. T. Selle.
Phillipsburg—King, M. I. Goddard & Son.

KENTUCKY.

Louisville—Stearns-Knight, The Metcalf Ericson Motors Co.
Paducah—*Koehler, H. C. King.

LOUISIANA.

Baton Rouge—Buick, Holfman Brothers Motor Car Co., Eagle Bldg.
Lone Elm—Oldsmobile, M. Canier.
New Orleans—Haynes, O'Rouke-Muller Motor Co., 624 Baronne Ave.
Marmon, M. Bells Son, 536 Baronne Ave.
*Kelly-Springfield, The O'Rouke-Muller Motor Co.
Wakeeney—Oldsmobile, A. B. Jones.

MAINE.

Lewiston—Overland, The Conant-Bradford Co.
Portland—National, The Motor Sales Co.
Saxon, The Motor Sales Co.

MARYLAND.

Baltimore—Abbott-Detroit, The Homewood Motor Co.
Inter-State, The Kunkle Wagon Works.

MASSACHUSETTS.

Boston—Metz, H. G. Spangler.
‡Martin semi-trailer, Arthur G. Bourke, Red Arrow Garage.
Lawrence—Oldsmobile, W. E. Bowlby.
Springfield—Paige, The Coson Berry Co.
Stoneham—Chalmers, D. G. Pratt Co.
Quincy—Oldsmobile, P. S. Yerxa.
West Newton—Oldsmobile, Baker Auto Supply Co.
Worcester—*Signal, F. C. Henderson, Henderson Bros. Co.

MICHIGAN.

Brighton—Oldsmobile, W. D. Pitkin & Son.
Detroit—KisselKar, G. W. Franklin, 698 Woodward avenue.
Boyne City—Maxwell, The Boyne City Garage.
Caseville—Oldsmobile, W. E. Watterworth.
Escanaba—Dodge, George D. MacKillian.
Kalamazoo—Oldsmobile, W. O. Harlow.
Flint—Elgin, The McKeighan Auto Co.
Vermontville—Chevrolet, The Ford Agency.

MINNESOTA.

Kimball—Saxon, French & Hoskins.
Minneapolis—*F. W. D., The Commercial Vehicle Co., 1402 Hennepin Ave.
Motley—Maxwell, V. Lockwood.
Rushford—Chevrolet, The Motor Sales Co.
Sanborn—Dort, J. H. Posz & Son.

MISSISSIPPI.

Clarksdale—*Koehler, Delta Grocery and Cotton Co.

MISSOURI.

Lafayette—Chevrolet, E. H. Andrews.
Studebaker, E. H. Andrews.
Kansas City—Peerless Eight, Gridley Motor Co., 1624 Grand Ave.
Nashua—Oakland, Lewis & Tillman.
Sikeston—Stutz, R. G. Gilbreath.
St. Louis—Bimel, Bimel Motor Car Co.
Maxwell, The Weber Implement and Automobile Co.
Warrenburg—Studebaker, The Burchfield Music Co.

MONTANA.

Dooley—Ford, Wright & Munson.
Glasgow—Chalmers, O. A. Tronned.
Glendive—‡Nilson, Shabel Lumber Company.
Lewiston—‡Nilson, T J. McKeon.

NEW HAMPSHIRE.

Manchester—Chevrolet, H. C. Lintott.
Reo, H. C. Lintott.

NEW JERSEY.

Hackensack—King, King Garage, Inc.

NEW YORK.

Auburn—*Koehler, William J. Perkins.
Buffalo—King, The Halistead Messersmith Co., 310 Michigan Ave.
Madison, Derrick Gannon Motor.
Syracuse—*Koehler, The North Side Garage.

NORTH DAKOTA.

Deering—Overland, Bertram Norreson.
Dickey—Ford, H. D. Mack.
Ferry—Ford, P. N. Gilberg.
Overly—Saxon, L. Gray.

OHIO.

Akron—*Koehler, E. E. Smith.
Ashtabula—King, The Nickel Garage.
Berea—King, D. I. Sterling & Son.
Bucyrus—*Koehler, Kroegel & Parsel.
Canton—Hudson, The Stark County Motor Co.
Columbus—Studebaker, Studebaker Sales Co.
*Standard, The Williams Contractors' Supply Co.
*Stewart, The Stewart Motor Sales Co., 103 South First St.
*White, A. F. Hieronimus, Jr., 169 N. 4th St.
Cleveland—Pathfinder, Garwood Motor Car Co., 2248 Euclid Ave.
Lorain—Madison, Welgand Motor Sales Co.
Sheridan—‡Nilson, L. B. Alexander.
Toledo—Franklin, The Standard Garage, 1518 Madison Ave.
Jackson, The Standard Garage, 1518 Madison Ave.
Jordan, The Barger-Mitchell Motor Co.

OREGON.

Pendelton—Buick, R. F. Trombly, Oregon Motor Garage.
Ford, R. F. Trombly, Oregon Motor Garage.
*G. M. C., R. F. Trombly, Oregon Motor Garage.

OKLAHOMA.

McAlester—Cadillac, The Cruther Automobile Sales Co.
Muskogee—Stearns-Knight, Anderson Bros.
Tulsa—King, W. E. Chastin.

PENNSYLVANIA.

Lancaster—King, Lefevere & Miller, Lime and New Sts.
Leighton—King, Blank Motor Car Co.

RHODE ISLAND.

Providence—Velie, The Earl B. Chase Co., Franklin St.

SOUTH CAROLINA.

Charleston—Peerless, The Palmetto Garage.

SOUTH DAKOTA.

Hot Springs—King, Paul E. Martin.
Milbank—Dodge Bros., G. H. Jurgens.

TENNESSEE.

Memphis—Jeffery, The Jeffery Auto Sales Co., 249 Monroe Ave.
Liberty Six, The Valley Motor Car Co.
Marmon, The Union Motor Car Co.
Oldsmobile, J. M. McKie Auto Co.

TEXAS.

Abilene—King, The Jones Automobile Co.
Ft. Worth—Studebaker, L. B. Alford.
Houston—Oakland, The Conant Automobile Co.
Velie Six, Steele-Leslie Co.
Waco—Oldsmobile, Ward & Phillips, 708 Austin St.

VERMONT.

Rutland—Marmon, A. A. Prouse.

VIRGINIA.

Norfolk—King, Kaehler Motor Co.
Richmond—Ford, A. Meyers Sons Co.
Warm Springs—*Koehler, James R. Webb.

WEST VIRGINIA.

Raleigh—*Koehler, Watson Bros. & Co.
Wheeling—*Commercial, J. C. Coleman, 1211 Main St.
*Federal, J. C. Coleman, 1211 Main St.
*Vim, J. C. Coleman, 1211 Main St.

WISCONSIN.

Antigo—Dodge Bros., F. D. Halferty.
Cameron—Ford, George Nelson.
De Pere—Apperson, Weyenberg Bros.
Studebaker, Weyenberg Bros.
Marinetta—King, Auto Supply Co.
Stevens Point—Briscoe, James Diver.

WYOMING.

Wheatland—King, The Drube Garage and Iron Works.

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"X" RADIATOR LIQUID.

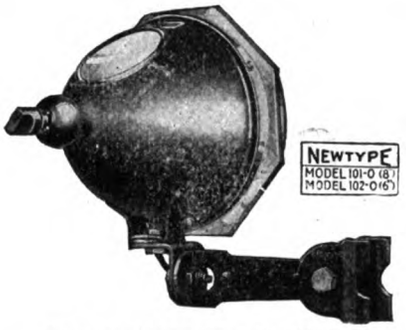
"X" Radiator Liquid is a scientifically prepared substance that when simply poured into the radiator will almost instantly seal a leak, and do it permanently. Not only is this method quick and economical, but radiator manufacturers declare that the liquid, unlike solder, does not injure the delicate honeycomb fabric of the radiator.

"X" Radiator Liquid does not contain glue, shellac, cement, meal or other compound that solidifies, yet it acts as a preventative, eliminates scale and rust and keeps the cooling system clean. "X" Liquid acts when it comes in contact with air, but will remain always as a part of the water in a liquid state, flowing through the radiator and pump as freely as the water itself. When once it has closed a leak, no amount of vibration can dislodge it, which fact has been proved in the two years it has been tested. "X" Radiator Liquid is guaranteed by a thoroughly reliable firm and being backed by an extensive advertising campaign, which introduces an attractive offer to dealers in a new display stand with an extra allotment of cans, giving dealers an extra profit on an assortment of a dozen and a half of the cans. "X" Liquid will be shown at the New York and Chicago shows.

Manufactured by the "X" Laboratories, 630 Washington street, Boston, Mass. Sold in two size cans, small size for Fords and other small cars, price 75 cents; large size that will repair radiators up to 25 gallon capacities, $1.50.

WOODS' NEW OCTAGON LAMP.

A new octagon spotlight that is different from other types on the market is shown in our illustration. It is the Woods lamp and is very attractive in appearance and durable in service. One feature is the method of carrying the rear vision mirror built into the body of the lamp, a method covered by patent. Another feature is that the interchangeable gripping clamps are built separate from the main arm of the bracket, which allows the dealer to carry an extra pair of clamps instead of carrying a double stock of complete lamps. The body and handle of the lamps are made from one piece of steel and the switch is built integral with handle. The bracket is electrically welded to the body. The reflector is recessed to take lens and by means of a large open coil spring the reflector and lens are held firmly against a heavy braided packing carried in the roll of the door. The lamp is made in two sizes, six and eight inches, the former being equipped with 21 candle power nitrogen bulb and the latter with a 36-inch bulb. Tests have shown that the first mentioned bulb when focussed in the Woods parabolic reflector gives approximately 7000 candle power, while the larger size gives 12,000 candle power when projected on a screen 15 metres, or 57.5 feet distant, according to the maker.



Woods Octagonal Spotlight.

Made by the Woods Manufacturing Company, Fairfield, Conn. Price of six-inch lamp, $9; eight-inch, $12.

Shaler Service Sign.

NEW VERNIER HEIGHT GAUGE.

Machinists and repairers familiar with the Starrett vernier caliper will appreciate the new vernier height gauge recently introduced to the trade. It possesses many improvements over old types and is of the same high quality of other Starrett products. The bar is 10 inches long, graduated to read by means of the vernier to .001 of an inch on measurements up to eight inches high. The base is 2¾ inches by one in width, hardened to give long wear and recessed in the bottom and ground square with the bar, giving perfect accuracy. An extension is furnished for the movable bar, which allows reverse measurements to be taken from the bottom or top side of the jaw. An attachment to permit measurements inside the frame of a jig or to measure the depth of recesses is also furnished.

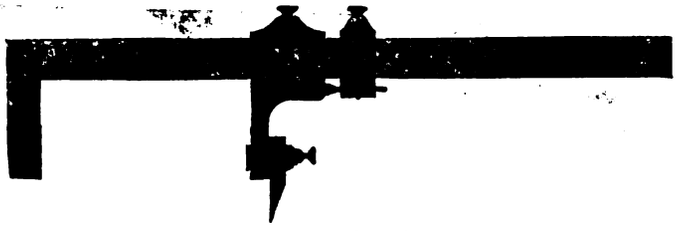
Manufactured by the L. S. Starrett Company, Athol, Mass. Price, including attachment, $33.

SHALER SERVICE SIGNS.

As a means of aiding repair men using Shaler tire repairing equipment to reap the greatest benefit from the wide publicity that has been given to the Shaler Wrapped Tread Method, the maker of the equipment is now providing signs for the repair men to display outside their shops. These are made of heavy steel, 14 by 20 inches, with a flange for attaching to building or post. It is brightly lithographed in red, yellow and black, and is attention compelling. The cost of these signs is merely nominal, not more than that of a cheaply printed card.

Supplied by the C. A. Shaler Company, Waupun, Wis. Price, 50 cents each.

Illustrating Use of "X" Radiator Liquid.



New Vernier Height Gauge.

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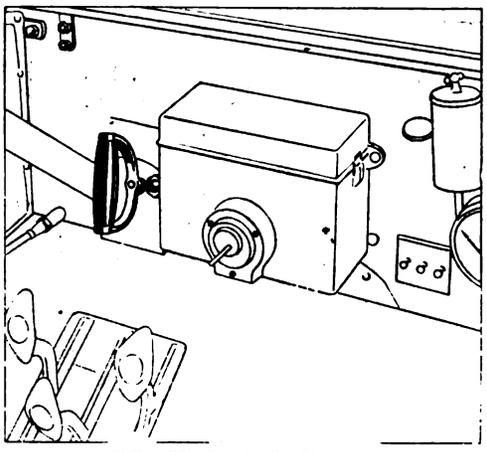
JIFFY STARTER.

The Jiffy mechanical starter is a simple device that fits over the end of the Ford crankshaft where the crank is attached. This is connected by chain and pulley to a hand lever on the dash board. A straight, easy pull on the lever imparts the same half turn motion to the crankshaft as does the ordinary Ford crank. Included with the starter is a positive primer. The operation requires only the placing of the foot on a small button. It can be installed by anyone. No vital parts of the Ford machinery are disturbed and the entire starter mechanism, except the hand lever, is completely concealed under the hood.

Manufactured by the Jiffy Starter Company, 427 Grand River avenue, Detroit, Mich. List price, $10.

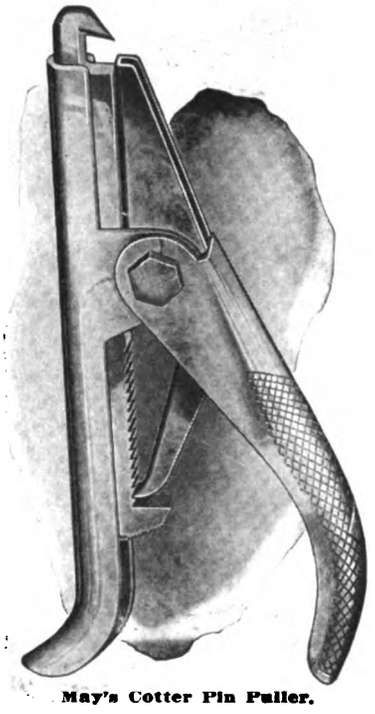


Jiffy Mechanical Starter.

MAY'S COTTER PIN PULLER.

This tool is specially designed to enable a workman to pull out any cotter pin, of any size or angle, regardless of its inacessibility or how badly it is bent. It straightens the pin automatically and prevents it being dropped into the mechanism. It is highly machined and nickeled.

Manufactured by the May's Cotter Pin Puller Company, 19 Peachtree street, Atlanta, Ga. Retail price, $1.25.

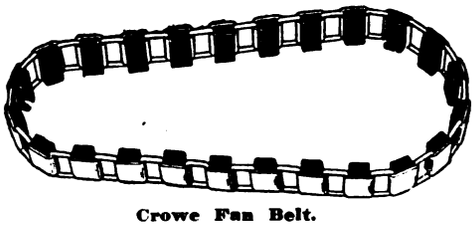


May's Cotter Pin Puller.

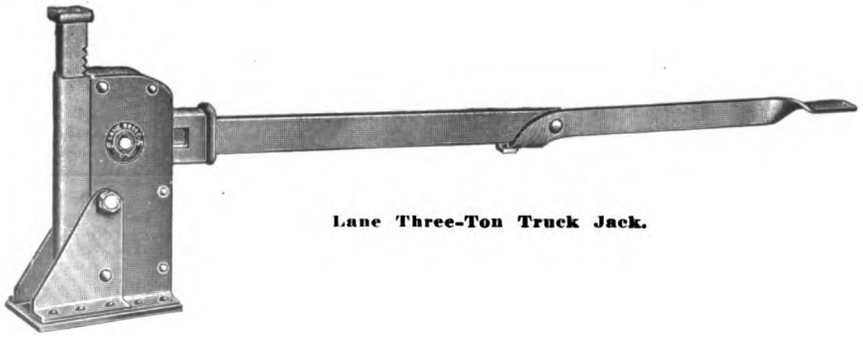
LANE THREE-TON TRUCK JACK.

One of the new accessories to be shown for the first time at the New York Show will be the Lane three-ton H-C truck jack, illustrated herewith. The distinguishing feature of the device is its great length of handle and the fact that it can be operated entirely from the end of the handle, which conduces to convenience, safety and powerful lifting leverage. As in smaller sized H-C jacks the handle is securely held in its socket by a spring catch. Reversal of operation is done by a lengthwise twitch on the handle, which, as seen in illustration, is folding. The load is lowered by a reverse pumping action, the lift bar dropping automatically when the truck is on the ground. The jack is then pulled out by its handle and the latter released by pulling on the spring catch on the under side of the socket. When the load is raised the jack can be locked.

Manufactured by the Lane Bros. Company, Poughkeepsie, N. Y. Retail price, $10; discounts are liberal.



Crowe Fan Belt.



Lane Three-Ton Truck Jack.

CROWE FAN BELT.

This belt is designed to replace the ordinary type furnished to drive the fan on Ford cars. It runs on the same pulleys as the flat leather belt, possessing twice the pull under the same tension and always driving the cooling fan at its maximum speed. It is constructed of genuine oak sole leather blocks, built into a high grade steel chain, which takes care of all pull. By a specially designed detachable link it is easily put on or taken off. No part is affected by oil, heat, water or dirt. Constructed on the famous caterpillar tread principle this belt will always cling to the pulleys no matter how oily or slippery they become, assuring positive means of driving the motor cooling fan.

Made by the Aniser Manufacturing Company, St. Joseph, Mo. Price, $1.00.

NEW M. & E. GREASE CUPS.

One of the best known and widely used standard grease cups on the market today is the M. & E. Ratchet Top cup. It has an interior coil spring engaging in radial corrugations of the top, or cap, and is claimed to be short, clean and very efficient. Recently the maker announced the introduction of a new M. & E. cup, which is claimed to be much improved over the old type. It has a more pleasing design, slightly more grease capacity, better threads, longer and straighter shank and a much improved finish. The new cup, with special finish, is said to possess rust resisting qualities to a much greater extent than the ordinary plain or rough steel cup. The special finish resembles nickel in appearance and lustre and has no coating to peel. It can be kept in prime condition by a slight rubbing with an oily rag. There is no additional charge for the special finish.

Manufactured by the Merchant & Evans Company, 2019 Washington avenue, Philadelphia, Penn., which also makes Hele-Shaw clutches, Evans alignment joint and Evans universal joint. Write for prices.

MEL-O-LITE.

This is a device to remove the glare from electric headlights. Essentially it is a filter, breaking up the light rays in such a way as to eliminate the blinding and glaring effect, at the same time sacrificing none of the illuminating power. It consists of a frosted piece of pyralin attached to and covering the inside of the lens, with a piece of green or orange (optional) pyrolin, about 1¼ inches in diameter, fastened to the centre of the lens. Made to fit any headlight where electric lighting is used, it is inexpensive and serviceable and may be easily attached in one second. It may be had with plain frosted effect instead of the green or orange centre piece.

Made by the Chicago Eye Shield Company, Chicago, Ill. Prices, 50 cents to $1.50 per pair.

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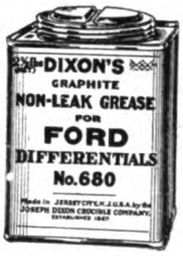
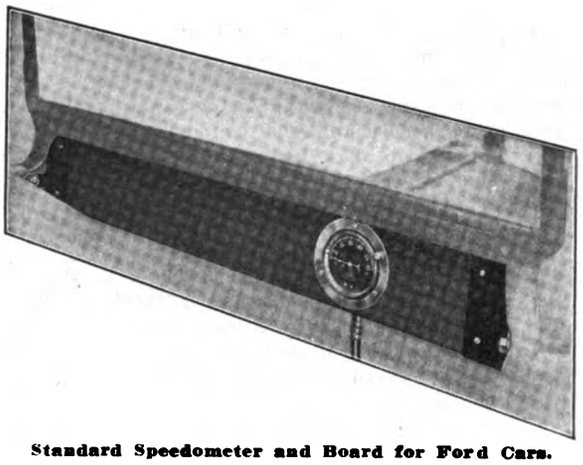
NEW DIXON LUBRICANT.

Another Dixon special graphited lubricant has been added to the large line of lubricants for automobiles sold under the well known name of Dixon. It is designated as the Dixon's Non-Leak Grease No. 680, and already has found wide favor among owners of cars having leaky differentials. In cases where ordinary lubricants cannot be prevented from working out on the brake bands, No. 680 has been found to always effect a cure for that trouble, and for that reason is one of the best selling of all Dixon lubricants. For the benefit of owners of Fords and other small cars, No. 680 is now put up in 2½-pound tins.

Manufactured by the Joseph Dixon Crucible Company, Jersey City, N. J. Now carried in stock by nearly all dealers.



Can Holds 2½ Pounds of Dixon Lubricant.



Standard Speedometer and Board for Ford Cars.

STANDARD SPEEDOMETER.

An outstanding feature of the Standard speedometer for Ford cars is the imitation leather covered instrument board that comes as a component part of the equipment. This board is bored to receive the Standard 201-N speedometer and has two detachable metal ends that lay snug behind the ends of the cowl. Further insurance against vibration is secured through the use of a metal clip holding the board against the cowl top. Installation of the board is extremely simple and quickly done and accessories other than the speedometer can be easily installed. The Standard speedometer has a 4¾-inch nickel flange, black bezel ring and silver or black dial, and 10,000-mile odometer, 100-mile trip with quick reset. Two outfits are furnished in this type instrument, one with the same drive as was originally designed by the Ford Motor Company and another that has the Standard ball bearing, adjustable swivel joint drive. The latter type is necessary when shock absorbers are used on front springs. There also is a Standard outfit for Ford couplet and one for the Ford sedan.

Manufactured by the Standard Thermometer Company, 65 Shirley street, Boston, Mass. The first mentioned outfit sells for $14; the ball bearing drive type for $15. Distributed by 50 sales and service stations, whose addresses will be furnished upon request to the maker.

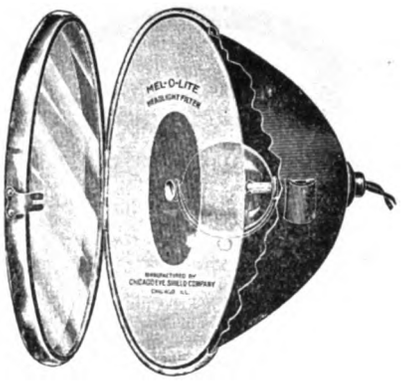
TRANSMISSION BAND CLAMP.

This tool is designed to facilitate the replacement of the bands in the Ford transmission, saving, it is said, three-quarters of the time usually required for this troublesome operation. The bands are held firmly around the drums, with the ears in perfect position to permit of slipping the three shafts in place as the cover goes down and the clamp is then removed through the small door in the transmission case cover. This eliminates the danger of injuring the felt gaskets in attempting to fit the shafts in place one at a time while pushing down the cover and insures against oil leaks caused by torn or turned over gaskets.

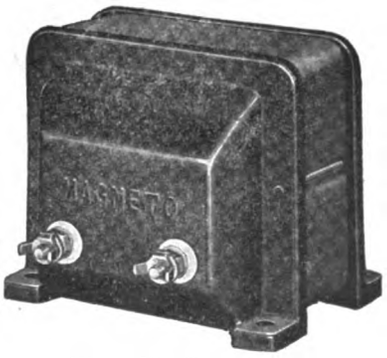
Made by the N. Y. Motor Car Device Company, New York, N. Y. Price, 50 cents each.

New M. & E. Grease Cups.

Transmission Band Clamp.



Mel-O-Lite Light Filter.



Waynelite Transformer.

THE WAYNELITE TRANSFORMER.

By the means of a specially designed transformer, called the Waynelite, it is now possible to equip the Ford so as to obtain a steady headlight illumination, which has heretofore been impossible owing to the fact that the current supplied by the magneto varies so with the motor speed. The Wayne transformer has been designed to overcome the failings of the electric lighting system of Ford cars. It steps up the current so that it will give the lamps a steady and bright light at slow magneto speeds and yet at the same time so hold back excessive current, such as at fast speeds, that there will be no danger of burning out the electric bulbs.

Made by the General Electric Company, Fort Wayne, Ind. Price upon application.

EVER-TIGHT PISTON RINGS.

The Ever-Tight piston ring, because of its unusual, but scientific construction, is said to absolutely prevent leakage, to fit any cylinder, however badly it is worn, practically eliminate carbon trouble and reduce maintenance cost. The chief feature of this ring is its three-piece construction, the three separate parts being grooved together by the ring's right angle interlock. Engine builders and engineers are agreed that this principle of locking is the best for safety and prevention of leakage. Because of the construction, the rings fit tightly without binding and, because they are exceedingly flexible, friction is reduced to the minimum, increasing the horsepower 15 per cent. and reducing the heat, wear and tear. Everywhere these piston rings have been used they give unqualified satisfaction. The maker is conducting a big national campaign of education among motorists.

Marketed by the Ever-Tight Piston Ring Company, 1423 Chestnut street, St. Louis, Mo. Write for prices.

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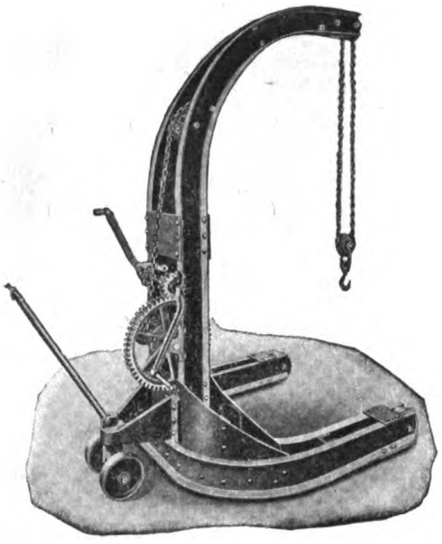
LAFAYETTE STEEL CRANES.

The Lafayette Engineering Company, Lafayette, Ind., is producing the Lafayette portable steel crane. They are built in three sizes, having lifting capacities of 3000, 4000 and 5000 pounds, and consist primarily of a jib mounted on a horseshoe base, the jibs having overhang of 30, 36 and 42 inches respectively.

The bases are mounted on double wheel casters and wheels at the ends. All structural parts are steel and cannot break, the parts are assembled with bridge rivets and there is a hand winch with the power so compounded that the load capacity of the crane can be lifted very readily.

There are two locks for the winch, so that it is absolutely safe for any work. The base of the crane is low enough to clear any vehicle axle. There is a hand lever attached to the caster, with which the crane can be readily moved and placed exactly wherever wanted by a boy. The crane is designed to lift the ends of the heaviest cars for work beneath them. The wheels of the crane are mounted on roller bearings. The hoisting chains are guaranteed not to break with three-ton loads.



Lafayette Portable Steel Crane.

SCHRADER INFLATING VALVE.

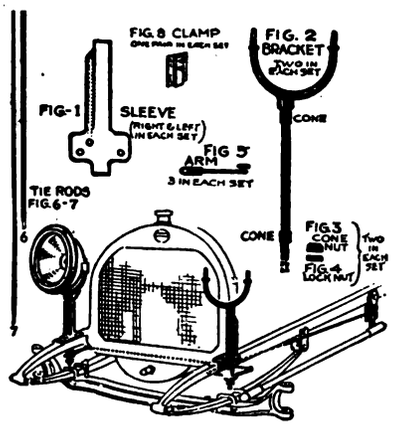
Those garage men who have been annoyed by the carelessness of patrons neglecting to shut off the flow of air after inflating their tires, should investigate the Schrader automatic inflating valve, a view of which is shown on this page. This instrument is for the use of garage owners who provide a free air station for the convenience of their customers, and it is intended to do away with the wastage of air due to the carelessness of patrons who forget to turn off the air influx after using. The Schrader inflating valve automatically locks the bottled air into the tank the instant it is removed from a tire valve. You turn on the air by pressing the nozzle of the inflating valve against the tire valve, and you turn it off by removing the device. It is made to fit any stock size of hose, from ¼ to ⅝ inch.

Manufactured by A. Schrader's Son, Inc., 800 Atlantic avenue, Brooklyn, N. Y. Price, $1.

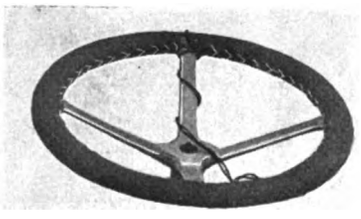
STEERLITE BRACKETS.

Steerlite headlight brackets are designed to take the place of the rigidly attached type and to enable one to turn the headlights automatically and simultaneously with the turning of the front wheels. They may be attached by anyone, being supplied with fittings, connections, bolts, etc., and are suitable for either electric or gas lights. The cone bearings for the brackets and the ball joints in the rods insure no increase in steering resistance in the operation of the Steerlite brackets.

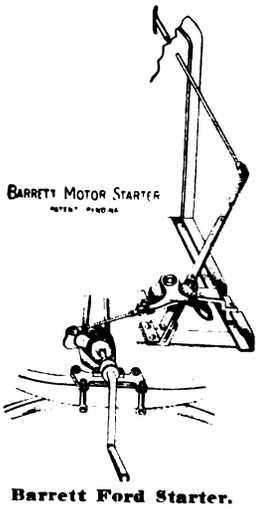
Made by the Motor Products, Inc., Stamford, Conn. Price for Ford car set, $12; for other cars, $15.



Steerlite Headlight Brackets.



Heated Wheel Cover.



Barrett Ford Starter.

BARRETT FORD STARTER.

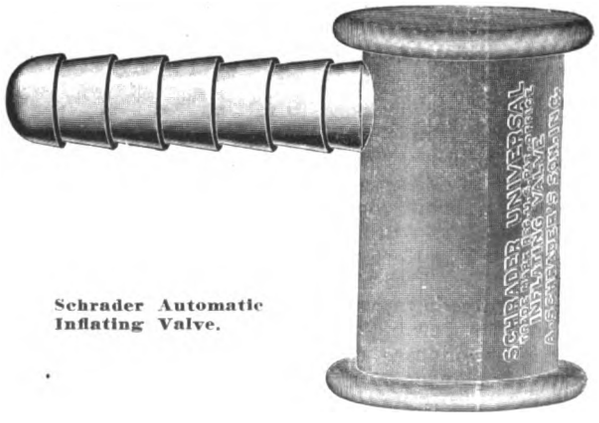
The outstanding features of the Barrett starter for Ford cars, aside from the fact that it is simple in construction, easy to operate and easily installed, are that there are no pulleys, cables or chains in its construction to break, stretch or kink. In the matter of installation it is not necessary to bore holes, nor to remove the original crank. The starter is completely out of sight, and it is made to meet and withstand all shocks and strains. Should the engine backfire, the starter is automatically released, before damage is done. It is operated from the driver's seat and the leverage is direct and the pull easy. The working parts of the apparatus do not contact with any moving part of the engine, and consequently there can be no wear, which insures it will last as long as the car. Any one can install the starter.

Distributed by the Pioneer Sales Corporation, 1777 Broadway, New York City. List price, $12. Write for detailed description and liberal trade discount proposition.

HEATED WHEEL COVER.

An electrically heated hand warmer for steering wheels possessing the feature of a heated element for winter driving and also an efficient steering wheel cover or grip has recently been invented and patented in the United States and Canada. This device has an outer canvas cover under which are two heating units of resistance wire at points generally grasped by the hands. These units are of thin wire laid between asbestos fabric covering and do not make a bulky device. The appliance is laced on the wheel—no bolts or screws are used. Current is obtained from the storage battery, through a flexible cord, and is controlled by a switch on the dash. The inventor claims the consumption of current is negligible, and that the device can be used during the summer as a wheel cover and grip to afford maximum security when driving. When installed on a Ford current is derived from the magneto.

Invented and patented by Geo. H. Barnes, Stanbridge, East, Que., Canada. The patent is for sale.



Schrader Automatic Inflating Valve.

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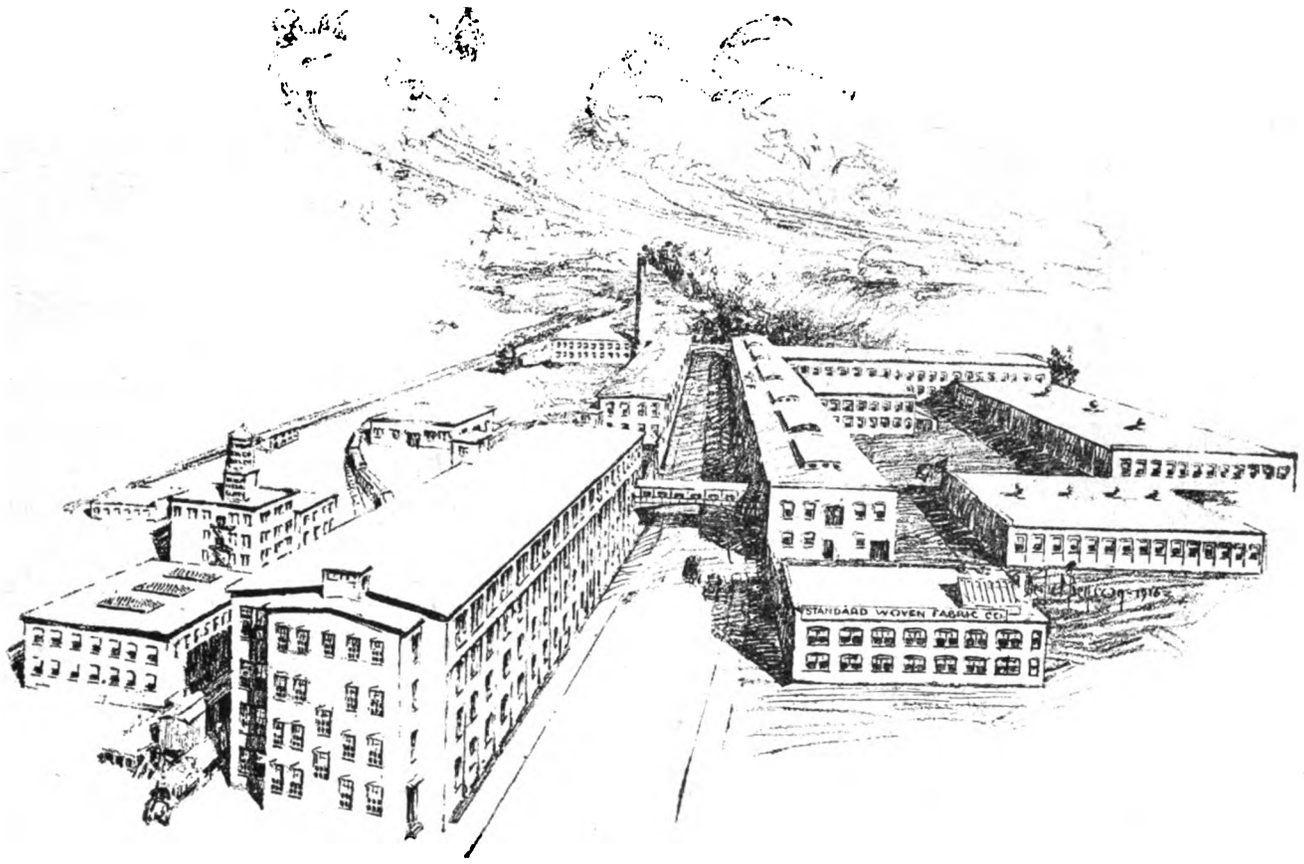


The Reasons Back of
MULTIBESTOS
TRADE MARK REGISTERED
SUPREMACY

AN explanation of the nature and preparation of the original Multiweave asbestos fabric---the most successful and effective brake and clutch lining on the market.

MULTI

TRADE MARK

MANY different substances have been tried as material for brake lining. Of these, asbestos has proved itself superior. It is mineral in its nature and is the only substance that will withstand the tremendous heat generated in automobile brake drums.

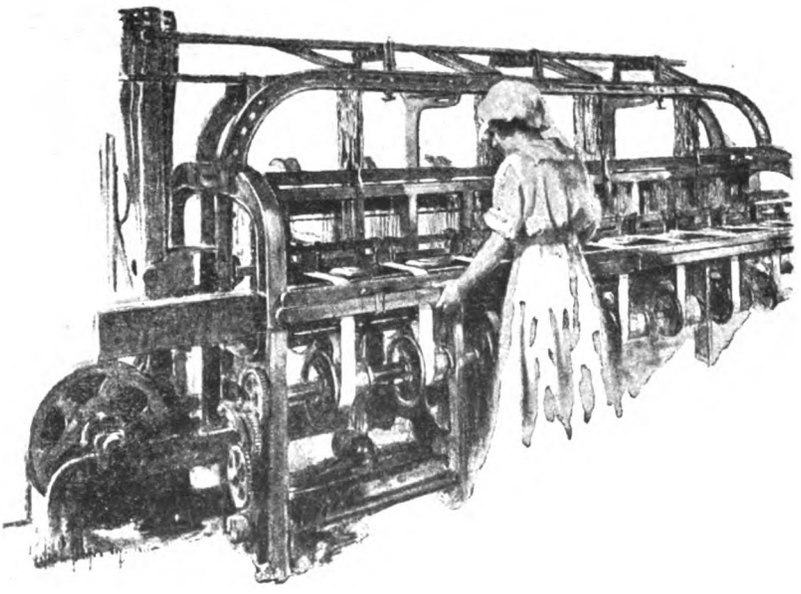
FOR the manufacture of Multibestos the best graded Canadian asbestos has been selected. This rock is shipped in carload quantities from the mines direct to our spinning plant, where it is closely inspected and nothing but the long fiber asbestos accepted.

¶ These selected pieces of the crude rock are first crushed under giant steel rollers until they become a fluffy mass. Next comes the picking and combing process which removes all extraneous matter and turns the fibers in one direction. The carding machines finish this process, spreading the mass into sheets by means of wire-toothed rollers, and completing the untangling of the fibers.

A SECOND process in carding is the twisting of the asbestos sheets into threads of yarn. The threads at this stage of production are not strong enough for weaving purposes, so they are next taken to the mule-spinners where they are twisted further and given the necessary tensile strength.

¶ At this stage brass wires are interwoven with the asbestos to give added strength and body to the yarn which is now ready for the looms that will weave it into the brake lining fabric.

¶ In every step of the production of this fabric every precaution is taken to safeguard quality and to insure the strength and heat resistance of the materials which in their final state make up Multibestos.



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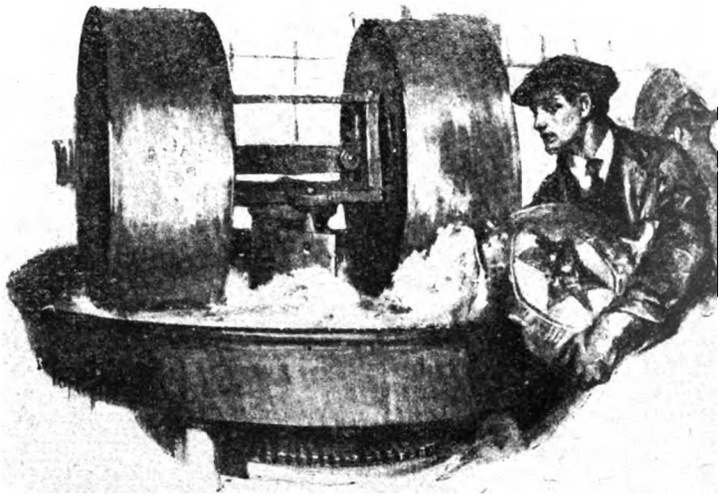
BESTOS

REGISTERED



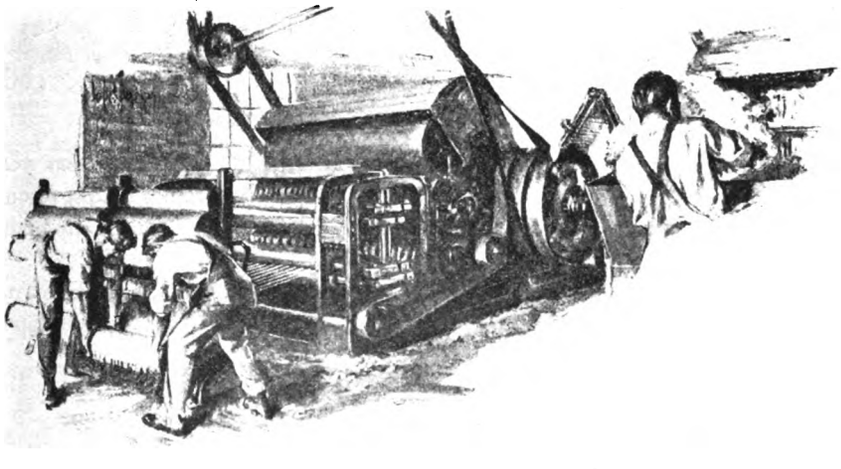
MULTIBESTOS gets its name from the foct that it is a multiple weave of asbestos. Multiple weave is the technical expression for solid weave and indicates that there are no loose plies or stuffers which can tear apart or become separated when the lining is in service.

THE multiple weave feature is made possible by special looms capable of weaving the fabric in any width up to twenty inches. The standard thicknesses are 1/8", 5-32", 3-16", and 1/4".

NEXT comes the treatment---probably the most important operation in brake lining manufacture. The woven fabric is taken from our looms and after thorough inspection is impregnated with a special compound. This compound permeates every fiber of the fabric and adds to the heat resisting quality of the lining.

¶ As a result of this treatment Multibestos is not in the least affected by oil, grease, gasoline or any foreign substance. It has an even contact surface with no uneven spots to carry an unequal load when the lining is in service.

¶ Multibestos has the highest co-efficient of friction of all linings by a considerable percentage as has been proved by technical tests and in actual service. It contains more asbestos per square inch, thus increasing its braking surface and adding greatly to its wearing qualities.



¶ Its durability makes it cost less per mile of service. Its solid texture, powerful grip and flexible action make it in every way the **right brake lining.**

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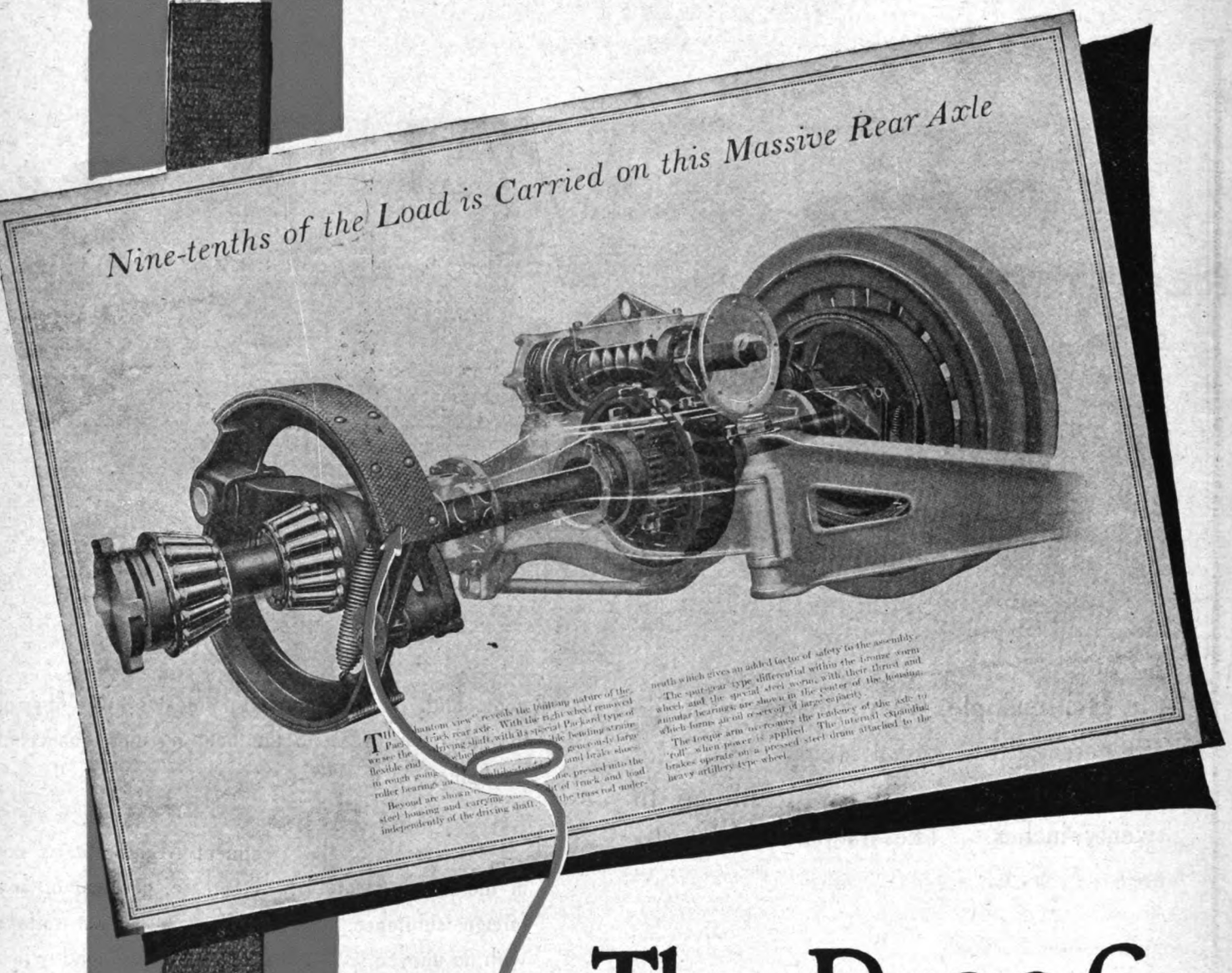
MULTIBESTOS REG.U.S.PAT.OFF.



The Proof

HERE is a double page from the Packard Truck Digest for September, 1916, showing a phantom view of the rear axle of one of their trucks. The illustration shows

MULTIBESTOS

TRADE MARK REGISTERED

in place on the brake shoes. If you look at the specifications you see the adjective "Multibestos-faced." If this does not prove our assertion that Multibestos is standard for brake linings on high-grade cars and trucks, what else will?

¶ We will give you any information you wish to convince you that Multibestos is the stuff you need for your brake and clutch linings.

Multibestos is manufactured by the

Standard Woven Fabric Co.

Factory, Walpole, Mass.

Brake Clutch Linings — **Friction and Tire Tapes**
Rubberized Cotton Fabrics — **Corrugated Matting**
Insulated Compound and Varnishes

MULTIBESTOS REG.U.S.PAT.OFF.

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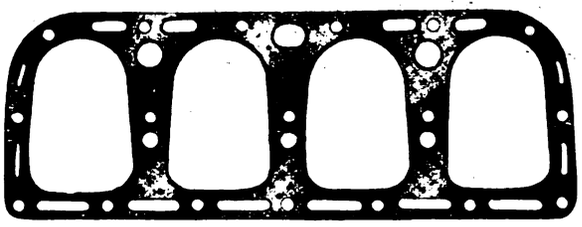
READY MADE
READY TO ATTACH GASKETS

To produce a really good home-made gasket requires experience, patience and time consuming effort. It requires some science and knowledge of the proper materials to use if the cutting and fitting is to be done right. The workman must have these qualifications to fit a gasket properly, quickly and profitably.

With a Fitzgerald Ready-To-Attach Gasket all the usual bother and delay is eliminated. They can be fitted perfectly and almost instantly and their cost is so moderate a garage, repair or machine shop man cannot afford to make gaskets when he can buy Fitzgerald Ready-To-Attach-Gaskets from his jobber or dealer.

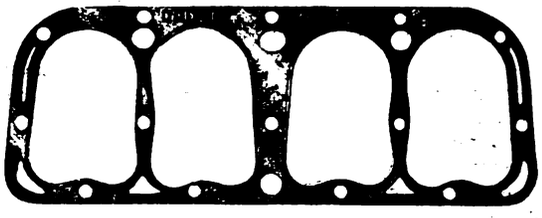
Fitzgerald gaskets are made on honor and produced on a quality basis. They are trade-marked and sold under a full guarantee, covering material, workmanship, finish and, above all else, a perfect fit.

NOW MADE FOR THE FOLLOWING VEHICLES AND MODELS



FORD
VIM
DODGE

OAKLAND
ENGER
MONROE



CHEVROLET
MAXWELL
(75) OVERLAND (83)

We are the largest makers of special stamping and metal specialties in America. Enormous productions, great purchasing power with unlimited manufacturing facilities permits us to **undersell and give better quality goods than competitors.**

We make for the trade, all jobbers and dealers can supply any demand for the following:

Electric Motor Driven Horns, Electric Vibrator Horns, Mechanical Horns, Motorcycle Horns, Copper-Asbestos Gaskets, Auto and Motor Boat Push Buttons, Shims and Shim Stock, Washers and Stampings, Spring Battery Connectors, Gasket Sets for Ford cars, Ford Electric Lighting Outfits, Ignition Wiring Assemblies, Hard Rubber Switches, Wire Terminals, Brass and Steel Shim Stock and Hose Bands.

Catalogue, Price List and Discount Sheets at request

FITZGERALD MANUFACTURING CO.

TORRINGTON :: :: :: :: CONNECTICUT

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Garage Equipment and Motor Car Accessories

WELLSWORTH GOGGLE DISPLAY.

The maker of Wellsworth goggles is supplying dealers at no cost to them with a hardwood mission style display cabinet. It keeps the goggles clean, separates them from other goods and serves as a "silent salesman." The goggles rest on a tray, each pair being accompanied by a neatly lettered card bearing the name and price, and the whole is enclosed by a glass sliding cover. Underneath the tray is a roomy compartment, which is accessible from the rear. and in which to place extra stock of goggles and cases. The cabinet is given free with either of three combination sets of goggles, No. 1A containing 43 pairs, No. 2A 64 and No. 3A 83 pairs, each combination including suitable individual boxes or cases. Advertising literature, a large lens cleaning cloth and order blanks are also supplied.

Supplied by the American Optical Co., Southbridge, Mass. Retail prices of goggles range from 50 cents to $2.50 each.

CHAMPION WRENCH SET.

In addition to the regular line of socket wrenches and other tools for working around automobiles, the Champion line includes a set designated as No. 12, which includes a steel ratchet wrench, steel extension bar, an offset wrench handle, a drop forged universal joint, six drop forged double end engineers' wrenches (giving 12 openings), 34 pressed steel sockets, of which 23 are hexagonal and 11 square, and a spark plug socket to fit standard plugs. This set makes it possible to fit most any nut likely to be found on a machine and between the combination of engineers' wrenches and socket wrenches and universal joint it would seem that it would be possible to get at a nut in any conceivable position. Packed in a neat and substantial wooden case, nicely finished.

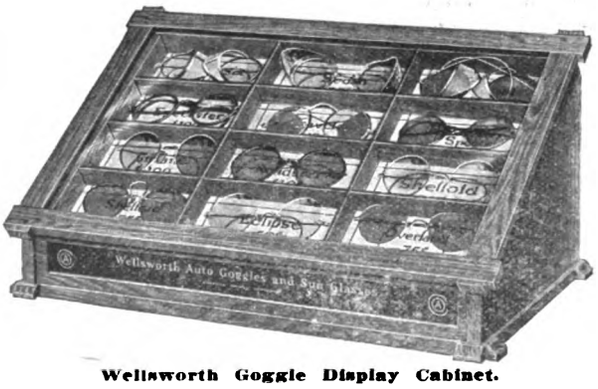
Made by the Syracuse Wrench Company, Syracuse, N. Y. Price, $12.00.

HOLMES WRECKING TRUCK.

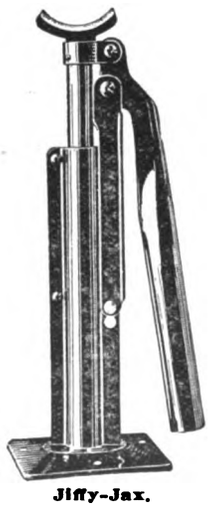
The Holmes wrecking truck is designed to meet the demands of the garage man for a rapid jack and a wrecking truck. It consists of a rigid and well braced frame mounted on two wheels, having generous hubs, containing Hyatt roller bearings. The wheels are reinforced with webs and are of a size suitable to easy pulling on rough roads. The frame and wheels are made of malleable steel castings and are practically indestructable. Arranged to fit into this frame is a long tapered, detachable tongue made of second growth ash, heavily ironed, so that it can be used as a pry, in which case the wheels and frame act as an ideal fulcrum. There is also furnished an axle rest, adjustable to any shape or size axle, either front or rear. This is an apparatus that nearly every garage owner has use for and when it is needed it is needed badly. With it a car may be almost instantly jacked up for tire changes or wheel repairs. Two of these make a combination that is sure to make most any wrecked car available for towing into the shop. The weight of the truck is about 158 pounds. This company has for free distribution a very illustrated pamphlet, describing its product, and also offers attractive trade inducements to dealers and garage men.

Made by Robert Holmes & Bros., Danville, Ill. Price, $30. Write for illustrated literature.

Champion Ratchet Wrench Set.



Wellsworth Goggle Display Cabinet.



Jiffy-Jax.

HAND SIGNAL LAMP.

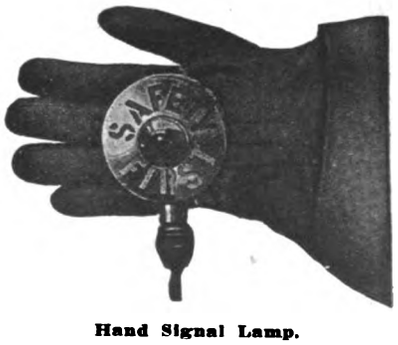
The Safety First hand signal is an effective signal at night. It consists of an electric lamp that is worn on the back of the hand, an elastic fitting around the hand, across the palm, holding it in place. Current is supplied from a socket on the dash through a fine silk cord to the lamp. So little current is required that it can be burned all the time. Since every driver almost instinctively extends his hand to indicate his intention to stop, slow down or turn a corner, this lamp on the back of the hand is a signal that nobody can fail to understand and heed. A two-candlepower bulb is used, enclosed in a polished nickel case, three inches in diameter and an inch thick. It is provided with a ruby bull's eye one inch in diameter and throws a strong red light. The bull's eye is surrounded by the words "Safety First," cut out in white. Besides being effective as a signal to traffic, it enables the driver to get the immediate attention of a traffic officer. This device is so light in weight that its presence on the back of the hand is scarcely noticeable.

Made by the Pittsburg Electric Specialties Company, Pittsburg, Penn. Price, $2 each.

JIFFY-JAX TIRE SAVERS.

To save the tires from the rotting effect of oil and water and grease which accumulates on a garage floor, it is necessary to jack the car up if they are to stand for any length of time, and for that purpose these Jiffy Jax tire savers have been brought out. They are made of steel and consist of a sliding lifter, which is operated through an offset handle of generous length by a toggle link arrangement. The leverage is such that only a slight effort is required to exert a lifting effort of 1000 pounds, and the jacks stay in the lifted position without further attention. They are adjustable for most any size wheel with a range from 13½ inches to 18⅜ inches. They are furnished four to a set, one for each wheel. The steel saddle is fitted with a solid leather cushion so as not to mar the finish at the point of contact. Capacity of one jack is given at one ton.

Made by the Jiffy Jax Company, Cleveland, O. Price, $6.00 set.



Hand Signal Lamp.

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DARIO RESTA writes: "I thank you for the wonderful lubrication given by Dixon's Graphite. I cannot praise it too highly."

HAIL!

The Racing Champions of 1916.

DARIO RESTA
JOHNNY AITKEN
EDDIE RICKENBACHER

In all of their gruelling, nerve-racking races against time, the greatest factor they had to overcome was FRICTION.

DIXON'S GRAPHITE Automobile LUBRICANTS

WERE THEIR ABLE ASSISTANTS IN EVERY RACE

JOHNNY AITKEN uses Dixon's Graphite Automobile Lubricants exclusively.

498 cars started in the 1916 races.
491 of these were lubricated with Dixon's Graphite Automobile Lubricants.
238 cars finished.
231 of these used Dixon's.

RESTA says—"Dixon's Graphite Automobile Lubricants give wonderful lubrication. I cannot praise them too highly."

JOHNNY AITKEN uses Dixon's exclusively.

EDDIE RICKENBACHER says—"I shall use Dixon's Graphite Automobile Lubricants, particularly No. 677, in all future races."

EDDIE RICKENBACHER writes: "I shall use Dixon's Graphite Automobile Lubricants, particularly No. 677, in all future races."

This is a little sermon that all car owners should profit by, and should be conclusive evidence that Dixon's Graphite Automobile Lubricants eliminate friction and prolong the life of every car.

Send for booklet No. 49 G, "Words of Wisdom From the Speed Kings."

Made in Jersey City, N. J., by the

JOSEPH DIXON CRUCIBLE COMPANY

Established 1827

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Garage Equipment and Motor Car Accessories

ECONOMY GARAGE CABINET.

In line with the recent propaganda designed to systematize garages and their equipment is the production of the new HB Economy garage filing cabinet in which to keep supply parts, miscellaneous small articles, catalogues and dealer helps in a location where they can be easily found when needed. These cabinets are sturdily built throughout, they being of oak and steel with drawers of semi-steel construction and 12 inches long, nine inches wide and three inches deep. Though exceedingly well made and finished they are sold at a low price.

Manufactured by the Hobart Bros. Co., Troy, O. Price of the 27 drawer size, $17.50; five per cent. discount when three or more are bought. Write for further details.

THE LAWCO DEFLECTOR.

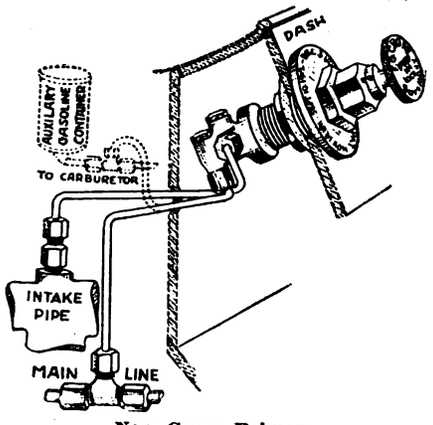
In this device the tip of the deflector dips downward, intercepting the upward rays at a point immediately in front of the focal point at which the extreme rays from the upper half reflector intersect those from the lower half. In addition to all rays that would naturally extend directly forward and those that would extend downward there are added by reflection from the inside of the deflector the rays that would otherwise rise upward. It is claimed that this arrangement assures full illumination on the road at normal focal distance from the driver's seat, with ample on the road immediately in front of the car and no glare. The Lawco deflector also serves to protect the glass from accident and from accumulations of snow, sleet or rain. An added feature of these deflectors is the setting of a "jewel" of red or green glass immediately above the tip of the shield. These are red on the left lamp and green on the right, serving as a guide to oncoming drivers.

Made by the F. H. Lawson Company, Cincinnati, O. Prices, $2 to $3.

NEW CRONE PRIMER.

The new Crone Primer is designed to facilitate the starting of the engine and save the starter batteries. It sprays a fine cloud of combustible gasoline at a point where the first spark starts the engine, only one or two operations of the primer starter being necessary. When not in use the valve is seated tightly and locked in position by turning the handle either to the right or left. Attachment is by boring a ¾ inch hole through the instrument board and fastening by a lock nut, and tapping manifold for a ⅛ inch gas pipe tap. The plunger is the full size of the barrel, which obviates the use of washers. The primer has no parts to wear out. Full details of the operation and construction of the device can be obtained from the manufacturer.

Manufactured by F. G. Crone, 334 Genesee street, Buffalo, N. Y. Retail price with fittings, $5 for one type and $6 for another.



New Crone Primer.

DAYTON AIRLESS TIRES.

Dayton airless tires, which are used on 75 per cent. of the motorized fire apparatus in the country and on many light commercial cars and Fords, have piers of live rubber set one inch apart throughout the inside of the tire cover, the piers supporting the weight of the vehicle and its load instead of by means of compressed air. When a small obstruction is passed over, the tires flatten out, giving a great range of resiliency. They are hand made and carry a written guarantee of 6000 miles of service. Dayton airless tires were invented in 1909 by John A. McMillan, and they have become so successful that the manufacturer is working 24 hours a day and has $2,000,000 of contracts for 1917.

Manufactured by the Dayton Rubber Manufacturing Company, Dayton, O. Prices upon application.

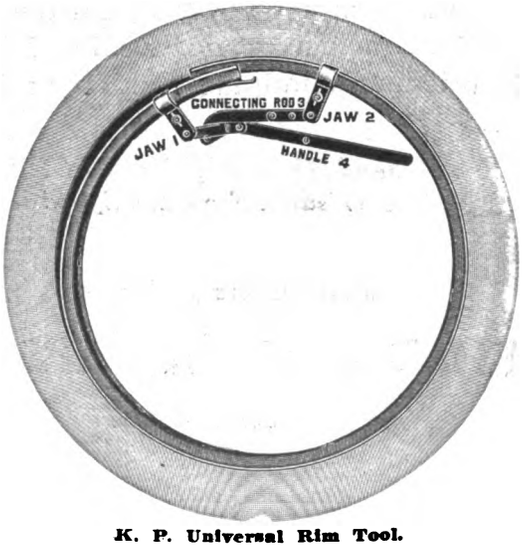
K. P. UNIVERSAL RIM TOOL.

The K. P. universal rim tool for use on transversely split rims, such as the Baker, Stanweld, Kelsey, Detroit and others of that type, is the most simple device on the market and does the work quickly and effectively. It has been the endeavor of the manufacturer to evolve a tool that is simple in operation and actually does all claimed for it.

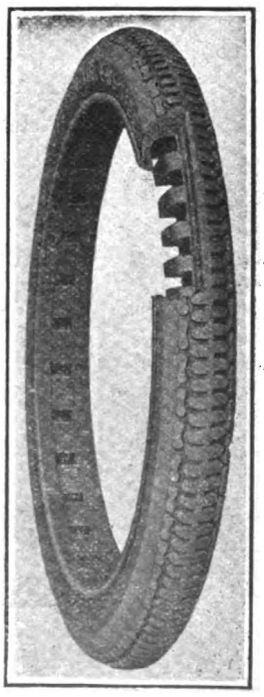
The manufacturer has issued some interesting literature that describes the device in detail, as well as pointing out the salient selling features that make for sales.

Made by the K. P. Manufacturing Company, 250 West 54th street, New York, N. Y. Price, $2.

Economy Garage Cabinet.



K. P. Universal Rim Tool.



Dayton Airless Tire.

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The elapsed time recorder

Garage Men You Will Sell More Cars

if you eliminate the disputes over repair charges.

Satisfaction with maintenance and repairs will insure a new order for the same make of car.

Calculagraph **elapsed time** records of repair jobs cannot be disputed.

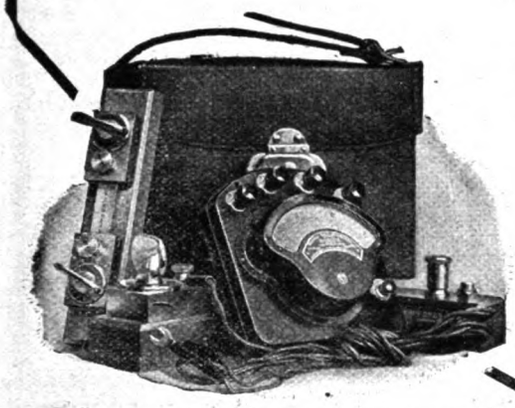
Elapsed time is what you buy from your workmen and sell to your customers. It should be accurately measured.

One Calculagraph will print the starting and finishing time and compute and print the elapsed time for all your workmen.

Send for free booklet W., illustrating a complete set of forms for a simple cost system for garages.

CALCULAGRAPH COMPANY

1476 Jewelers Building **New York City**



Which Garage Man Gets the Money?

If you can repair and adjust Electrical Starting and Lighting Equipment, you will get the cream of the garage business. With the increasing demand for this sort of service, you must equip to handle the business or lose it.

Weston

Model 280

GARAGE TESTING INSTRUMENT

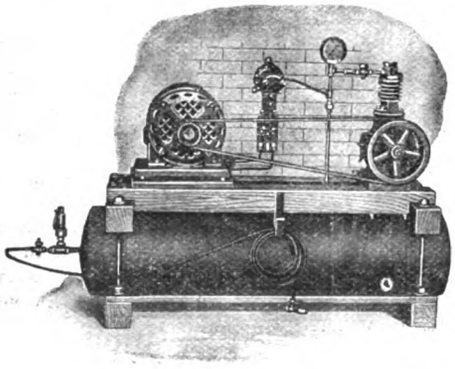
Is the best, the most reliable, and therefore the cheapest electrical equipment for you, it enables you to determine promptly and accurately the condition of the electrical equipment of any automobile, just where the trouble is, and just how to remedy it. Write for our Special Proposition.

WESTON ELECTRICAL INSTRUMENT CO., 103 Weston Ave., Newark, N. J.

23 Branch Offices in the Larger Cities

GARDNER

STATIONARY FREE AIR UNIT



FOR

SERVICE ECONOMY DEPENDABILITY

A Gardner Outfit of this type installed in *your* garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY

126 Williamson St., Quincy, Ill.

Singer Bldg New York City — Fisher Bldg Chicago — 5 First St. San Francisco

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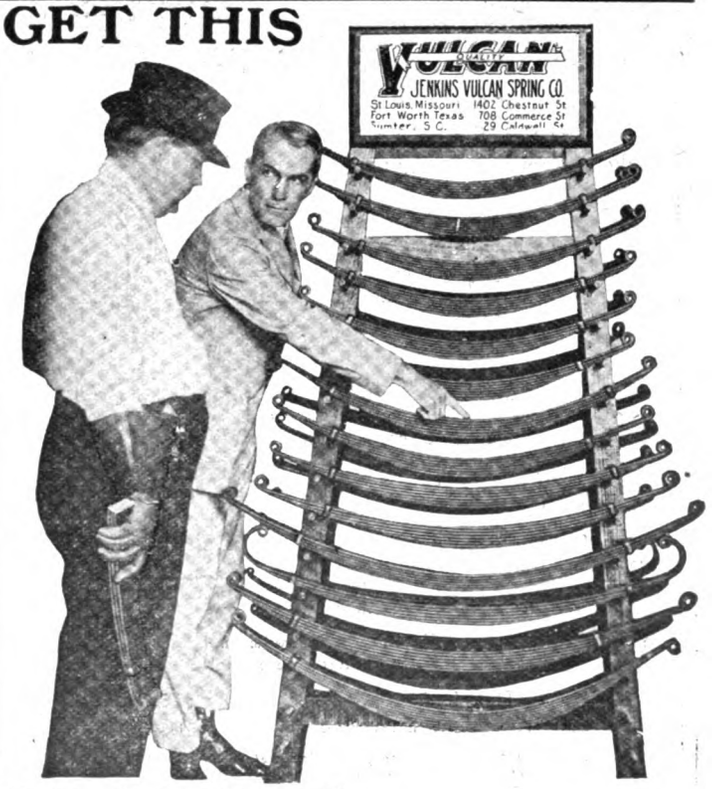

Jenkins Vulcan Spring Co.,

1402 Chestnut Street, St. Louis, Mo.

Gentlemen:—Please send proposition on agency for VULCAN springs.

Signed_____

Address_____

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This is the

CAR HEATER

That you have been looking for
And that you can sell !

Be an all year money making dealer by specializing in lines that sell constantly and that bring the big profits when owners are in the market and buying

This is a real car heater, the kind that affords service and satisfaction in all weather. A fitting attachment for any car, one that is automatic in control, and that eliminates back pressure, overheating, or gas escaping into the car.

Anyone can attach the Mason in less than an hour. It cannot become out of order, there are no parts to rattle, or holes to clog with dirt.

The Mason sets on the floor, not in it. A flexible steel tubing carries the exhaust gas to the center opening of the heater, where it divides and escapes at both ends of the plate, always giving sufficient and uniform heat.

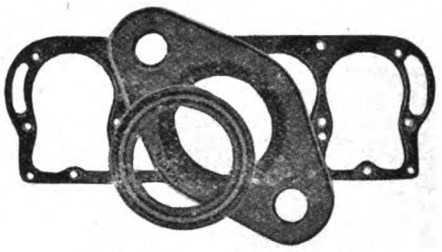
LIST PRICE **Complete with all fittings ready to attach**

Bronze, Heavily Nickel Plated . .	**$15.00**
Cast Iron, Black Enameled . . .	**10.00**

Our proposition will interest the largest house, yet it is just as valuable to the small dealer
Write today for discounts and terms

COX BRASS MANUFACTURING CO.
Established 1872
11 Mt. Pearl and Van Wort Sts., ALBANY, N. Y.
1733 Broadway, NEW YORK CITY

STEVENS & CO. NEW YORK



GASKETS

AMONG the many automobile accessories for which jobbers and dealers look to STEVENS for their main supply, Gaskets are one of the most important.

We are exclusive distributors of—***McCord Copper, Asbestos Gaskets,*** of which we always have a complete stock on hand.

Among them, in all sizes are the:—

ROUND CLOSED TYPE, ROUND FRENCH TYPE, STANDARD FLANGE EXHAUST TYPE.

COMPLETE SETS FOR FORDS

Of particular interest to the dealer and repairman are the

BOXED ASSORTMENTS

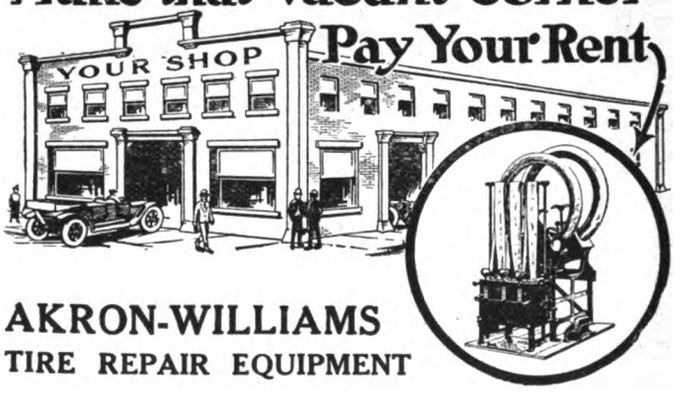
which give a great range in sizes, without the necessity of carrying a large stock.

It will repay you well to ask your jobber for prices on these gaskets.

STEVENS & CO.
Manufacturers of Auto Accessories
375 Broadway New York

MANUFACTURERS OF Automobile Parts & Accessories

Make that Vacant Corner Pay Your Rent



AKRON-WILLIAMS
TIRE REPAIR EQUIPMENT

Every motorist who enters your doors is willing and anxious to have his tires and inner tubes repaired—kept in the best condition—till the last bit of mileage is taken out. To do the best work and make the best profits, you must have the best equipment—the **AKRON WILLIAMS,**

Used by 60 Leading Tire Companies.
(Names furnished on request.)

And sold and recommended by them to their dealers. Scarcely any other business pays such large and sure profits on such a small investment. We show you how to make money **right from the start.**

Send for our new "Booklet 12."

THE WILLIAMS FOUNDRY & MACHINE CO.
ASH STREET, AKRON, OHIO

Exclusive Californian Distributors:
Waterhouse & Lester Co., San Francisco and Los Angeles.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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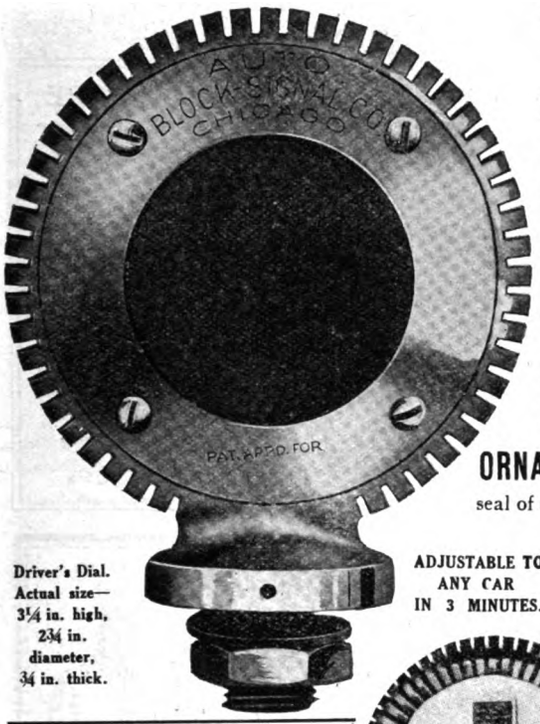
The AUTO BLOCK SIGNAL

SHOULD BE ON YOUR CAR IT MAY SAVE YOUR ENGINE



Driver's Dial. Actual size—3¼ in. high, 2¾ in. diameter, ¾ in. thick.

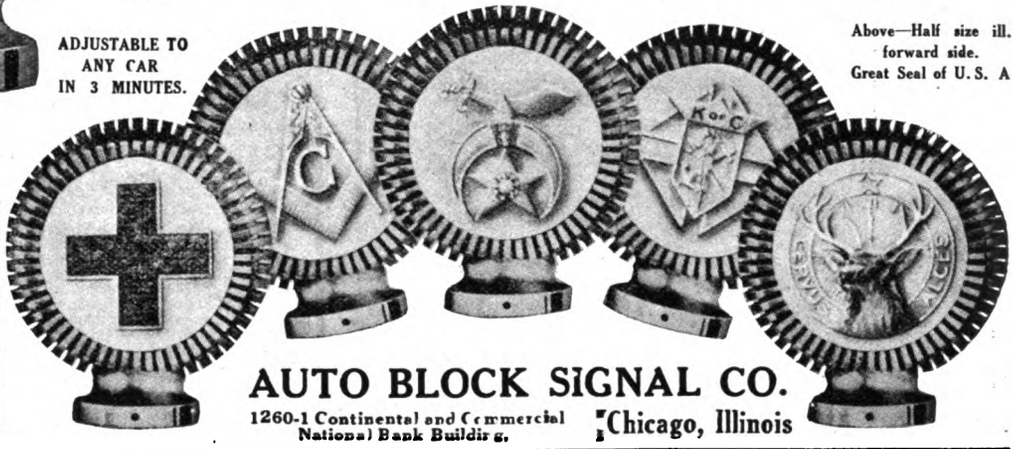
Price Only - - $5.00

Here is a practical, dependable warning device that *actually warns* the driver at the first indication of engine disorder. No figures, outlines nor scales to examine at close range. Just a big, red dial that turns jet black the instant disorder occurs. Always plainly visible from the driver's seat.

Too much carbon—loose connecting rods—scored cylinders—low water— and other irregularities forever threaten the life of your engine. The Auto Block is inexpensive protection against possible disasters. An ounce of precaution that saves big repair bills.

ORNAMENTAL: The most beautiful of all car head decorations, worth twice the price for its beauty alone. On the forward side, embossed in fine detail is the great seal of the U. S. A.—or in its stead your fraternal emblem, all heavily nickel plated.

ADJUSTABLE TO ANY CAR IN 3 MINUTES.



Above—Half size ill. forward side. Great Seal of U. S. A

JOBBERS, DEALERS AND GARAGE MEN

Big profit for you in the "AUTO BLOCK". Its the best selling "warner" made. No directions. No red tape. All car owners buy on sight. Write today for our proposition. Your territory may still be open.

AUTO BLOCK SIGNAL CO.

1260-1 Continental and Commercial National Bank Building, Chicago, Illinois

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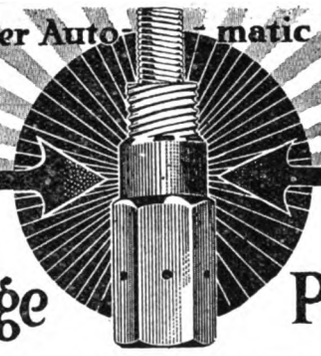
The Pioneer Auto-matic Gas Saver



More Mileage More Power

AEROFRAM Gas Saver

The Simplest and Most Efficient of All Gas-Saving Devices—Effects a Notable Improvement in Engine Performance—Anybody Can Install It in Ten Minutes—For All Cars.

Absolutely Automatic—Nothing to Adjust

Dealers: The Aerofram actually does the work that more expensive gas-savers claim to do. When you offer it to your customer you do so with the certainty that he cannot duplicate its efficiency with any other device at ten times the price. It will positively add two to six miles per gallon—in many cases more. Hundreds of users have testified to this. Write for details. Liberal selling terms.

Price in Canada $1.50

$1 **The Aerofram Co.** $1

107 Massachusetts Avenue. Boston, Mass.

Get This Free Book!

Dealers, Garagemen and Repairmen will find the new Harvey Spring Book an invaluable aid in ordering replacements. It contains a complete list of springs for over 600 of the leading makes and models of cars—gives sizes, weights, measurements, prices and other valuable information about automobile springs that has never been published before. Write for your copy today. We mail it free. Harvey Springs are carried in stock by leading jobbers throughout the country. When you write for the free Spring Book ask for name of your nearest jobber.

Boltless Auto Springs

Are Guaranteed From End to End

THE HARVEY SPRING CO. 851-17th St. Racine, Wis.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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WILMO
Gas Saving Manifolds

The WILMO vaporizes all the remaining gas particles right at the valve openings, therefore makes your car run smooth at all speeds.

SOLD BY ALL DEALERS

Gillette Motors Company

KING C. GILLETTE, President

MISHAWAKA, - - - - INDIANA

Successors to Wilmo & Amplex Co.

FORD TYPE
$18 Set of Four
With Rings and Pins.

DODGE TYPE
$20 Set of Four
With Rings Only

FEATHERWEIGHT
LIGHTER THAN ALUMINUM PISTONS
Will Put "PEP" into any motor.

Two-thirds lighter than the cast iron cannon ball type, they **increase** power and speed, and **reduce** vibration, carbon deposit and wear on bearings, and **save** fuel.

Dealers—Write Today for Our Selling Proposition and Discounts.

FEATHERWEIGHT PISTON CO.

WEIGHT

11 Guyman Way,
Pittsburgh, Pa.

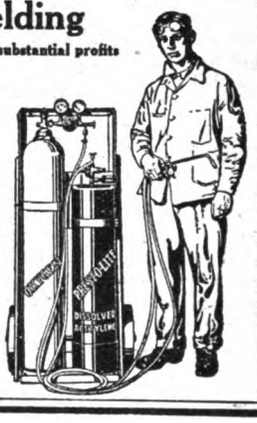
Add to Garage Profits by Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profits

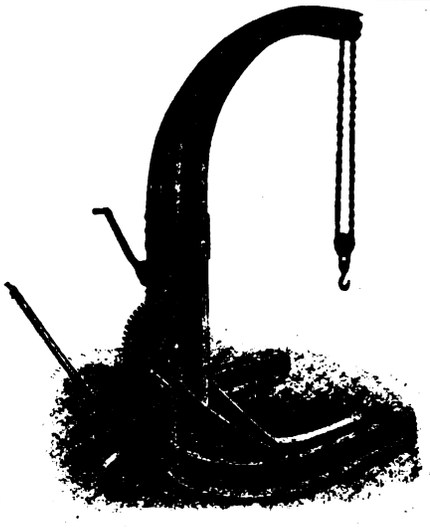
PREST-O-LITE
Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for $60.00. (Canada $75). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.



The Prest-O-Lite Co., Inc.
The world's Largest Makers of Dissolved Acetylene.
309 Speedway, Indianapolis, Ind.
Canadian Office and Factory, Merritton, Ontario



SAFETY FIRST

The "Lafayette" Portable Steel Crane

Made of steel—it will not break. Double locked with load. Safe. Low base. Ample power. Roller bearings. No garage or repair shop can afford to be without them. A complete hoisting and conveying machine.

STANDARD SIZES

No.	Height	Overhang	Capacity	Ht. of Base	Weight	List
6	8'-6"	3'-6"	5000 lbs.	8 inches	900 lbs.	$100.00
5	7'-6"	3'-0"	4000 lbs.	7 inches	700 lbs.	$85.00
4	6'-6"	2'-6"	3000 lbs.	6 inches	500 lbs.	$70.00

For Sale by Jobbers Everywhere or Write

The LaFayette Engineering Co., Mfgr's, LaFayette, Indiana

FEDERAL
Double-Cable-Base
TIRES

FOR

"Extra Service"

FEDERAL RUBBER CO. of Ill.
CUDAHY, WIS.

Do Business by Mail

It's profitable, with accurate lists of prospects. Our catalogue contains vital information on Mail Advertising. Also prices and quantity on 6,000 national mailing lists, 99% guaranteed. Such as:

War Material Mfrs.	Wealthy Men	Fly Paper Mfrs.
Cheese Box Mfrs.	Ice Mfrs.	Foundries
Shoe Retailers	Doctors	Farmers
Auto Owners	Axle Grease Mfrs.	Fish Hook Mfrs.

Write for this valuable reference book. Also prices and samples of Fac-simile Letters.

Have us write or revise your Sales Letters.

Ross-Gould, 1015K Olive Street, St. Louis

ROSS-GOULD
Mailing Lists St. Louis

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BEARINGS SERVICE COMPANY

GENERAL OFFICES . . . . . DETROIT, MICHIGAN
Branches in all Principal Cities.

ALL SEASON TOP

For 1915-1916-1917 Ford Cars

Warm and snug in winter. Cool and comfortable in summer. Fits flush to the body of car—no overhang. Positively no rattle or squeak. Finished of same material as used in upholstering car. Glass doors and panels easily removed if desired and set of curtains used in their place. Get full details from your dealer, or write us for illustrated catalog.

WADSWORTH MANUFACTURING CO., 1307 Jefferson Ave., Detroit, Mich.

SOLD ONLY TO THE TRADE

THE MARTIN LINE

Tire Covers, Radiator Robes, Inner Tube Cases, Water Buckets, Engine Robes

All jobbers and dealers should send a sample order. Do it before you stock your 1917 line. **Quality, prices and discounts are not met by any other manufacturer.**

No catalogue is complete unless the Martin Line is shown and listed.

Send today for latest circulars and discount sheets.

THE MARTIN MANUFACTURING CO.
LANCASTER, OHIO

Automobile Mailing Lists 1916

28,108	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
8,123	Ford Dealers, price $17.50, or $3 per M by states.
285	Ford Dealers, Canada, $1.50.
28,463	Auto Garages, price $40, or $2.50 per M by states
29,506	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
45,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
940	Auto Supply Jobbers, price $4 for the list.
4,093	Auto Tire Dealers, price $3 per M.
2,404,150	Auto Owners, in lots of 10 M, $2.00 per M, larger lots cheaper.
643,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

Write for particulars of any list you want.

A. F. WILLIAMS, Manager,
Phone Franklin 1182. 164 West Adams St., CHICAGO

Elmer and Edgar Apperson built the *first* successful American motor car in 1893.

And from that time to the present they have been constantly engaged in the work of building automobiles which would do credit to the name they bore. Theirs is a safe lead for user or dealer to follow.

They typify, in the fullest extent, what is meant by the term—*manufacturers of motor cars.*

Apperson Cars Are Made by Apperson Brothers

Their *last* achievement for 1917 is a triumph —A CAR WHICH DESERVES ITS NAME ROADAPLANE—for it *glides* over the land as the Aeroplane glides through the air.

It combines luxury, style and comfort, with mechanical perfection and beauty of design. Four models to choose from—

		Code Word
Six cylinder, four passenger Roadster,	$1750	Gold Kalot
Six cylinder, seven passenger Touring Car,	$1750	Gold Kalaet
Eight cylinder, four passenger Roadster,	$2000	Gold Malot
Eight cylinder, seven passenger Touring Car,	$2000	Gold Malaet

We have an interesting financing proposition to put before responsible automobile dealers in all parts of the world, where the Apperson line is not represented. Complete catalogue in English or Spanish and details will be promptly furnished upon application.

Apperson Bros. Automobile Co.
308 Main Street
Kokomo, Ind., U.S.A.
Cable Address "Jarab"

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BATTERY CHARGING BRINGS BIG PROFITS

The H. B. Set charges from one to six auto starting and lighting batteries at one time. Current costs about 15c per battery, and you get from 75c to $1.50 for each battery charged. FIGURE YOUR PROFITS. Every Auto Storage battery needs a full charge outside the car at least once in two months, as a well charged battery means more power, brilliant lights and quick starting.

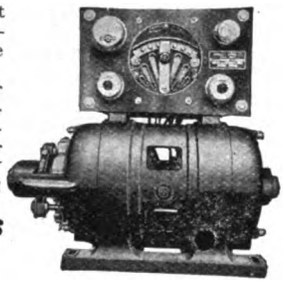
H. B. users are averaging $20.00 to $60.00 per month CLEAR PROFIT.

Read What Some of Our Satisfied Users Say:

Robt. Keska, Newark, Ill., says—"The H. B. generator is a good paying investment. It works fine, and is an easy money maker."
Grover Bussard, Lipscomb, Texas, says—"Clearing $35 per month from battery charging on a battery business of $40."
Chas. Hoverstock, Topeka, Ind., says—"Clearing $48.85 on a battery business of $50.00 a month."

$10.00 PLACES THIS MONEY MAKER IN YOUR GARAGE, the balance in fourteen monthly payments of $10.00 each. Every H. B. Outfit will show you a most substantial profit and will be paying for itself.

Send in this ad with your name, we'll gladly send particulars about this profit making H. B. Set. Send your name NOW. DELAYS PAY NO DIVIDENDS. DO IT NOW!



Hobart Brothers Company
Box A13 TROY, O.

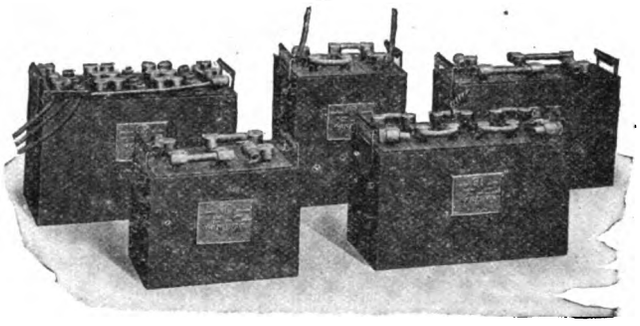
General Lead Storage Batteries and GLB Repair Parts

are distinguished by their uniform HIGH QUALITY and their REASONABLE COST

If you are a DEALER or if you REPAIR BATTERIES you should at once get in touch with a RELIABLE CONCERN that can supply you not only with every capacity and dimension of NEW BATTERY but, more important, with nearly EVERY SIZE and DIMENSION of REPAIR PART REQUIRED in any first-class Battery Repair Shop.

Today We are Supplying Some of the Largest Service Stations. Why Not You?

GENERAL LEAD BATTERIES COMPANY
CHAPEL STREET AND LISTER AVENUE
NEW YORK NEWARK, N.J. CHICAGO



Makers of Storage Batteries and Storage Battery Parts for all uses

BOWSER
ESTABLISHED 1885

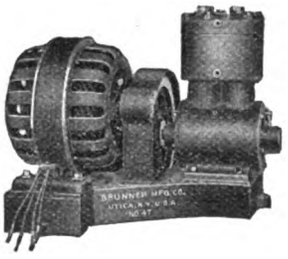
Superiority, in construction and service, is a distinguishing feature of Bowser equipment that insures perfect satisfaction for all concerned. It was the following of this policy of "built-in quality" for 31 years that so firmly established the Bowser reputation.

Today the name BOWSER

on oil handling or storage equipment of any kind is the hallmark of excellence like "Sterling" on silver or "Mazda" on lamps. It reflects a certain distinction upon all users---proof of their good judgment as well as their desire to own only the best.

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA
SALES OFFICES IN ALL CENTERS REPRESENTATIVES EVERYWHERE.

BRUNNER AIR COMPRESSORS



have consistently demonstrated their sterling worth in the garage—ever since the garage business has been a business----

The Brunner is honestly built and honestly advertised.

Be Honest With Yourself Mr. Garageman

investigate the Brunner Line before you order your new air compressor---send for our catalogue and handbook on compressed air---get the facts---protect yourself against trouble.

The Brunner Air Compressor has survived endless competition and the fact that there are more Brunners going into garages today than there are compressors of other makes---should convince you that the Brunner should be your choice.

Write for particulars and name of Brunner Jobber covering your town.

WE WILL EXHIBIT AT THE NEW YORK AND CHICAGO SHOWS

BRUNNER MFG. CO.

Main Office and Plant
Dept. A
UTICA, N. Y.

Cincinnati Branch
419 First National Bank Bldg.
CINCINNATI, OHIO

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FOR MOTOR CARS AND MOTOR BOATS.

Tenox Liquid Gasket makes a non-leaking, lasting and perfect joint, when attaching cylinder heads to cylinder blocks, cylinders to crank case and assembling crank and gear cases. It is ideal for use on pipe threads and all oil and fuel connections.

Tenox Liquid Gasket takes the place of copper, asbestos or paper gaskets and saves time, labor and material, requiring no cutting or bothersome fitting. **IT ALWAYS FITS AND NEVER LEAKS. TENOX LIQUID GASKET IS APPLIED WITH A BRUSH; LIKE PAINT.**

For owners, repairers, garage and machine men Tenox Liquid Gasket is the practical solution of difficult and doubtful repair work. To obtain a perfect joint, simply clean the faces of the flanges, cover both surfaces to be joined with Tenox, using a brush, and assemble—almost instantly you will have a perfect non-leaking joint. No other gasket will last so long.

Tenox Liquid Gasket is used and recommended by some of the largest producers of motors in America. They say Tenox should be used in all shops and carried in every car. If you are doubtful, a trial can will be forwarded post paid, upon receipt of 30 cents. You will receive enough for almost any job.

JOBBERS AND DEALERS—We guarantee perfect results or refund your money. Tenox has been tried, tested and proved. It is sold by thousands in the trade. If you do not sell or use Tenox, write today.

List Prices: One-eighth Pint $.25. One Pint $ .80. One-Half Pint $.50. One Quart $1.50.

No other gasket necessary or desirable. The cost of time and labor saved by using Tenox will generally pay for the whole job.

TENOX PRODUCTS CO. Audubon Park, 158th Street, NEW YORK CITY.

Repair Tires—Make Money

Don't continue to plod along and be content with just a storage business with occasional sale of gasoline and oil. The garage that is making money today is the one that is vulcanizing tires with a

SHALER VULCANIZER

You don't have to go out and solicit business. The auto owner when he comes to you for supplies, gasoline, oil, etc., and knows you can repair his tires, will give you the job.

Give your customers this complete service they like, be ready to repair their tires, make money for yourself.

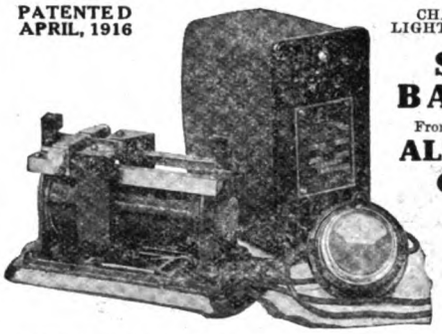
Anybody who can clean or adjust a car can operate a Shaler because of the simplicity of **Shaler Wrapped Tread Method** and **Automatic Heat Control.**

Catalog Free Send at once for the new Shaler catalog, the most complete Vulcanizer Catalog ever published. Get the low discount price for the Shaler garage type pictured here. We will also send you our book "Common Sense about Tire Repairs" for garages only.

C. A. SHALER & CO., 267 Fourth St., Waupun, Wis.
The Largest Manufacturers of Vulcanizers in the World

F-F MAGNETIC RECTIFIER

PATENTED APRIL, 1916



CHARGES STARTING, LIGHTING AND IGNITION

STORAGE BATTERIES

From 110 or 220 Volt 60 Cycle

ALTERNATING CURRENT

Full Wave Form
10 Ampere Output

$15, Complete
F. O. B. Cleveland

Write Dept. C for Bulletin No. 8

THE FRANCE MANUFACTURING CO., Cleveland, Ohio
***Jobbers and Dealers** Throughout United States and Canada*

Trade Subscription Offer

Including three motoring magazines—one gives over to the pleasure car field—another to commercial vehicles and the third to industrial interests. Each magazine distinct.

The lowest rate ever made for leading motoring papers. Write for details.

ACCESSORY & GARAGE JOURNAL
Times Building **Pawtucket, R. I.**

THE MOTOR TRUCK

A magazine for business men devoted to the promotion of highway haulage efficiency. It is the national authority of vehicular transportation.

PUBLISHED MONTHLY

The year $2; the copy 20 cents

Automobile Journal Publishing Co.
Times Building **PAWTUCKET, R. I.**

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Of all the mechanics you will meet,
You'll not find one that won't repeat;
"Give us wrenches superior by far,
To ordinary shop tools or that go with a car".

REAL ECONOMY

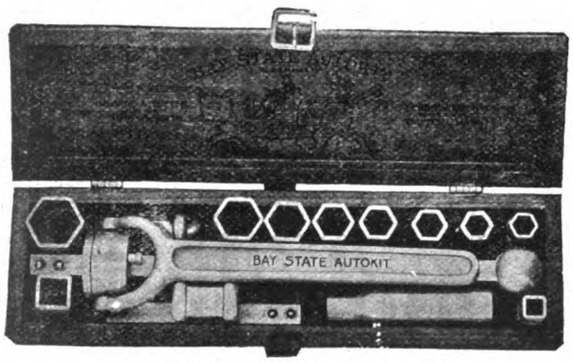
Well conducted and organized repair shops maintain full records of work done, who did the job, and time taken in doing it. They make a profit on labor.

These shops specialize in machine and tool equipment. They charge from 40% to 80% more an hour for labor, yet the cost is less to the customer and the job is done right. This is shop economy that permits a profit.

The repairer that wastes his time in looking for wrenches that will fit the job, or making makeshift tools, accomplishes little and delivers a poor piece of work. The bill is big and there is always a comeback. This is overhead that eats profits and destroys prestige and standing.

There is just the Bay State Autokit for every owner and repairer. With the sockets and swivelling reversible ratchet handle and extension shanks, all nuts, bolts or set screws on any car or truck can be reached from any angle or position.

Most jobbers and dealers sell and recommend Bay State Autokits. They will tell of the great economy in time and labor saved. That no tools are better made, that they are guaranteed to give satisfaction in the hardest service and that they will not break or fail you.



BAY STATE AUTOKIT NO. 2

Set No. 1, 31 Sockets - - -	$10.00
Set No. 2, 12 Sockets - - -	7.50
Set No. 3, 11 Sockets (For Ford Cars) -	4.00

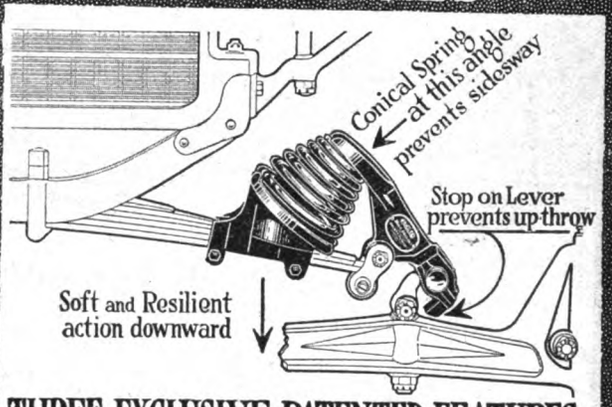
JOBBERS AND DEALERS—Specialize in selling equipment that has the demand. Trade literature and discount sheets at request.

GEORGE A. CUTTER

Taunton Sales Agent **Mass.**

HASSLER

Shock Absorber
For FORD Cars



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"

— 100,000 FORD OWNERS RECOMMEND IT —

WRITE FOR DEALERS TRIAL SET PROPOSITION

$15 for a Set of Four

Robert H. Hassler, Inc.
Indianapolis, Ind.

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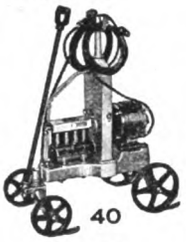
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LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

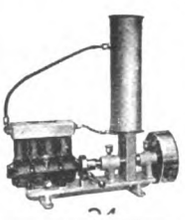
FREE AIR SERVICE CURB STANDS

Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. *Save Money.*

LIPMAN AIR APPLIANCE CO.
199 Pleasant St., **BELOIT, WIS.**



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Beware of Imitations.

This perfect three-piece construction justifies the name—EVER-TIGHT. Note how accurately the right angles fit together. Engineers and Engine Builders acknowledge that this is the only proper construction for safety and prevention of leakage.

You'll Want Ever-Tight Piston Rings!

Ever-Tight Piston Rings absolutely prevent leakage. No need to rebore worn cylinders—Ever-Tight will fit them. They give compression in out-of-round cylinders as well as in true ones. They reduce maintenance cost and practically eliminate carbon troubles.

Ever-Tight Piston Rings consist of three separate parts grooved together into one ring by its own right angle interlock. They fit tight, without binding. They are flexible and friction is reduced to the minimum. The Ever-Tight is the only perfect three-piece piston ring on the market. **It is the leader.**

We are telling thousands of motorists these same facts about Ever-Tight Piston Rings. We are convincing them that they **must** install Ever-Tights. Are you ready to supply your customers with the ring they want? Be in line to meet the demand. Sell piston rings that satisfy the purchaser—that make the first-time buyer your steady customer. Sell Ever-Tights.

Write us today for details and prices to Dealers.

EVER-TIGHT PISTON RING CO.
1423 Chestnut Street St. Louis, Mo.

MOTORISTS HAVE LEARNED
That they get purer, cleaner gasoline; get all they pay for and get it quicker from

Wayne

CURB PUMPS

That's why they pass up all others whenever it's possible to reach a WAYNE—That's why a WAYNE would make business and money for you.

Get particulars and easy payment plan. Write now.

WAYNE OIL TANK & PUMP CO.
2 Canal Street Ft. Wayne, Indiana
Canadian Office: 1 Wabash Avenue, Toronto, Ontario

SELL SULLIVAN TRUCKS

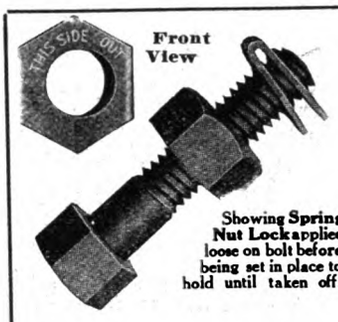
One of the few staple and practical trucks on the market.

Our selling policy and proposition is the most liberal ever offered to the trade.

One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
Rochester, New York



Showing Spring Nut Lock applied loose on bolt before being set in place to hold until taken off.

Why Not Be Sure

that every part of the engine; chassis, or body of the car you make will **stay** together until taken apart?

Spring Nut Locks

are the simplest, surest, safest device to positively lock any nut on any bolt. Resists all vibrations. Cannot harm threads. Easily applied. Released whenever desired.

Cheapest and Best.

Manufacturers, Jobbers, Garage Men, Repair Men and all Dealers should write for prices on sizes now available. Orders filled in rotation. All sizes by January 1st.

Spring Nut Lock Company
651 Transportation Bldg.
Chicago

Spring Nut Lock tightened against Nut. Prevents Nut being shaken off and follows Nut tightening against material.

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FLOATING PLUNGER WHEEL PULLER

Makes a "frozen" or "stuck" wheel come off easily. Hit the plunger. turn the screw, hit again, and the wheel is off.

Made for **Ford, Overland, Buick, Maxwell, Saxon, Chevrolet, Reo, Oakland,** and **Paige.**

New models continually being added. List of models and prices on application.

TIMER FOR FORD CAR

Extra heavy pressed steel shell, aluminum finish. Insulating ring of gray bone fibre.

Terminals insulated all the way through. One-hand, self-closing oiler. Pressed steel arm and compression spring on brush assembly. Brush assembly can be had separate. Interesting prices.

OUR 1917 CATALOG NOW READY

MOTOR SPECIALTIES CO.

WALTHAM MANUFACTURERS **MASSACHUSETTS**

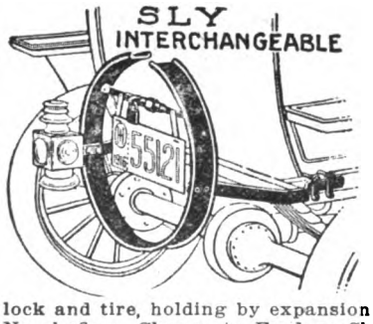
KENNEDY AUTO STORAGE COVERS

Furnish efficient and economical protection for cars in dead storage. They are made of heavy, durable paper, in standard sizes to fit any cars.

MADE ONLY BY

THE KENNEDY CAR LINER & BAG CO.
SHELBYVILLE, IND.

HESS-BRIGHT
BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
The HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA, PENNSYLVANIA, U.S.A.



SLY Interchangeable and Cradle Type TIRE HOLDERS

Interchangeables quickly adjustable for all Ford and Chevrolet tires and demountable rims. Combines place for lamp, number plate lock and tire, holding by expansion grip on inside of tire. No chafing. Clamps to Ford or Chevrolet frame without drilling or bolting. At all jobbers, or write

New Era Spring & Specialty Co.
865-A Woodward Ave. Detroit, Mich.

New Ford Carburetor Attachment

that's making a lot of money for dealers everywhere

Makes Ford cars start instantly—stops the roar and clatter—makes the Ford cooler running at all speeds—practically eliminates carbon—makes the engine so flexible it can be throttled down to less than four miles an hour on "high"—MAKES A GASOLINE SAVING OF 15% to 50%, or $1.50 to $5 per month. Write us to send you a

MyleMayker

Copyright 1916, Myle-Mayker Co.

MYLE-MAYKER COMPANY
Dept. 12-J, 323 East 33rd Street, CHICAGO, ILL.

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Equip Your Garage with a WhitneyHand Miller

so you won't have to turn away profitable repair business, or turn it over to the machine shops.

The Whitney will take care of any milling job in the line of auto repairs. With it you can cut gears, cams, sprockets, do key seating, straddle milling, profiling, slotting, slabbing, drilling, die sinking and countless other operations.

With this all around machine you can handle the work in your own garage. You can avoid delays; you can accommodate customers.

Simply send a postal for catalog No. 3

THE WHITNEY MFG. CO., - - Hartford, Conn.

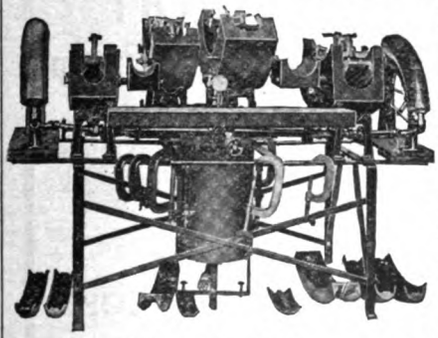
CHAINS-KEYS-HAND MILLING MACHINES

NEW DEPARTURE BALL BEARINGS

American Made FOR American Trade QUALITY FIRST

THE NEW DEPARTURE MANUFACTURING CO. CONRAD PATENTS LICENSEE BRISTOL, CONN., U. S. A.

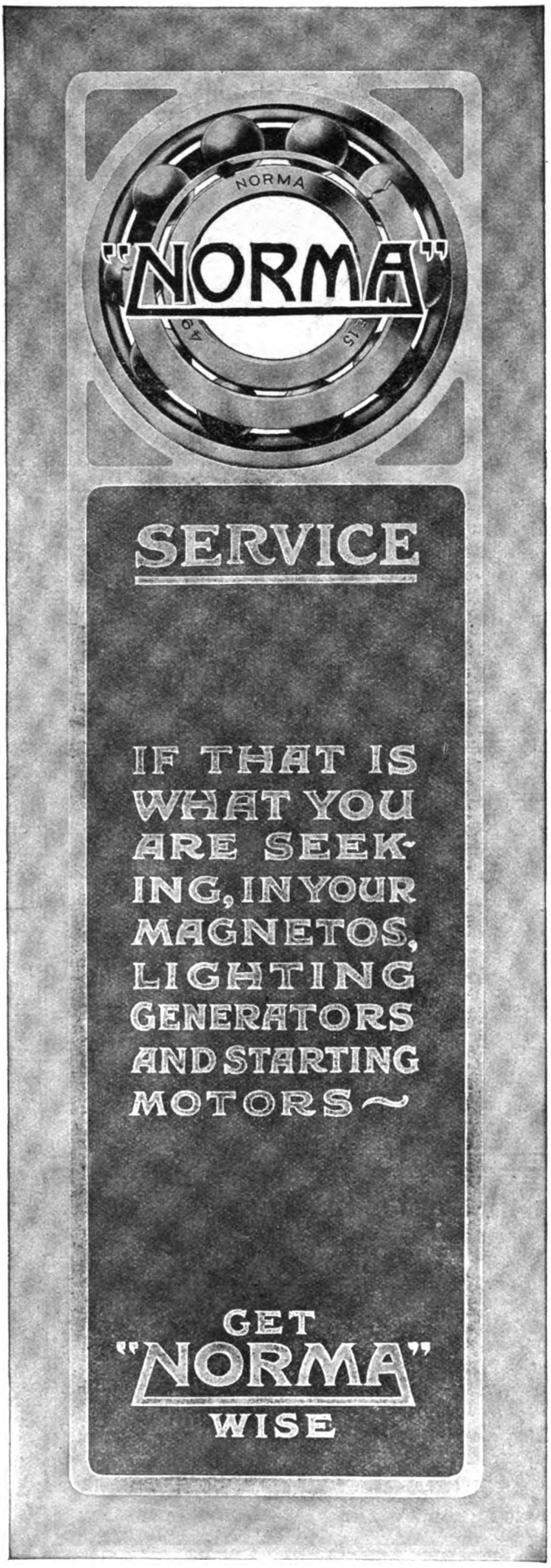
Big Money Double Treading



Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch inclusive.

VANDERPOOL CO., Springfield, Ohio

and 1044 S. Main Street, Los Angeles, Cal.



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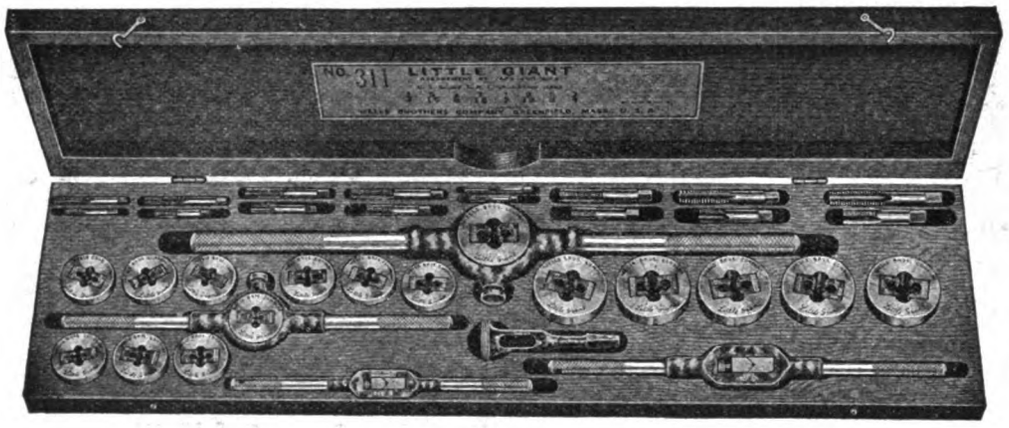
Little Giant Combination Screw Plates

Both United States and S. A. E. Standards



These assortments are particularly valuable in the automobile repair shop where a considerable amount of threading is done. Each die is contained in its own collet and is adjusted to size. There is also a Bit Brace Die Holder for cleaning up battered threads in hard-to-get-at-places.

Every need of the manufacturer, the garage and repair man, or the car owner who makes his own repairs, for tap and die assortments can be supplied from our big line.

Send to-day for the circulars "Tools for the Automobile" "First aid in the up-keep of the Automobile".

Greenfield Tap and Die Corporation, Greenfield, Mass.

New York Chicago Philadelphia Galt, Ontario

Time Savers

For Charging Storage Batteries

HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.

Made of steel—lead plated—may be used over and over again.

No. 21-A—1½" spread of jaws.

Your money back without quibble if not entirely satisfied.

Single Lots, Each 20c Lots of 10, Each 15c Lots of 100, Each 12 1-2c

R. S. MUELLER & CO., 431 High Ave., S. E., Cleveland, Ohio.

ELECTRIC GLUE POT

Mabey's Dry Heat Electric

GLUE POT

No flame; no soot or smoke. All danger of fire is eliminated.

Capacity	Price without cover
1 qt.	$ 9.50
2 qts.	11.00
3 qts.	12.75
4 qts.	15.75

Century Automobile Cigar Lighter, Complete $1.00 Each, F. O. B. Indianapolis.

DEALERS—Write For Prices.

MABEY'S ELECTRIC & MFG. CO.

968 Ft. Wayne Ave Indianapolis, Ind.

Will pay for itself in a few days

The Superior
Vulcanizer

Be independent. Do your own Vulcanizing.

SUPERIOR'S are simple, efficient and inexpensive.

They do all kinds of repairs on casings and tubes

Write for descriptive catalog

SUPERIOR VULCANIZER CO.

A-16 Fulton Avenue ROCHESTER, N. Y.

$10

YOU CAN SELL A

DETROIT Gearless Tire Pump

to 75 per cent. of the motorists to whom you show it. It goes on the crankshaft when you use it.

DETROIT ACCESSORIES CORP.

519 Hillger Avenue Detroit, Michigan

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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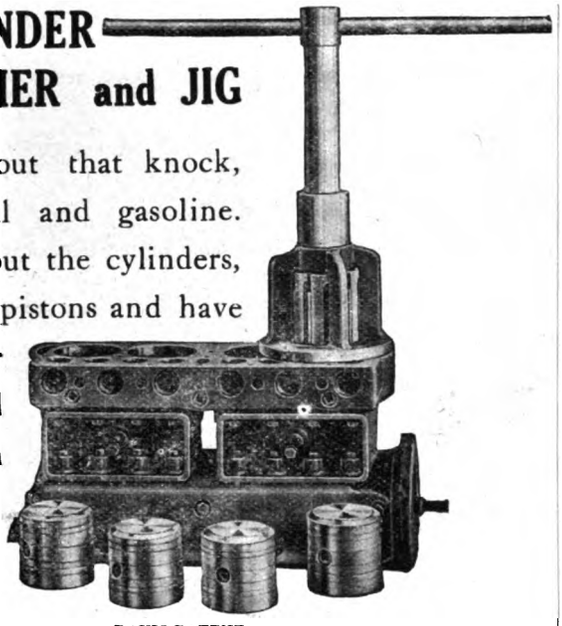
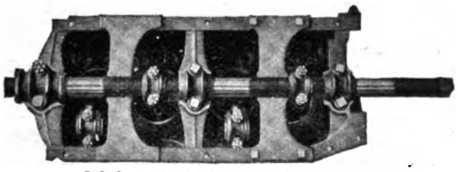
BETTER Tools Mean BETTER Work BETTER Profits BETTER Business

CYLINDER REAMER and JIG

Take out that knock, save oil and gasoline. Clean out the cylinders, fit new pistons and have a motor as good as when new.



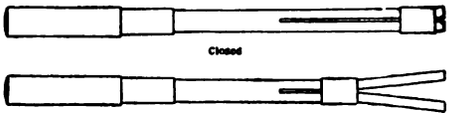
DAVIS PATENT



TWO ALIGNING GUIDES FURNISHED WITH REAMER

FORD CONNECTING ROD AND MAIN BEARING REAMER

NO MORE SCRAPING A FUSSY JOB MADE EASY.



(Patented)

Removes
- Steering Knuckle
- Spindle Arm
- Spindle

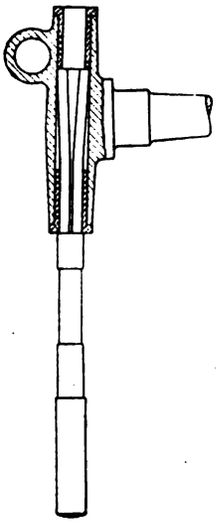
} BUSHINGS in a JIFFY

Made of Tool Steel and nicely finished.

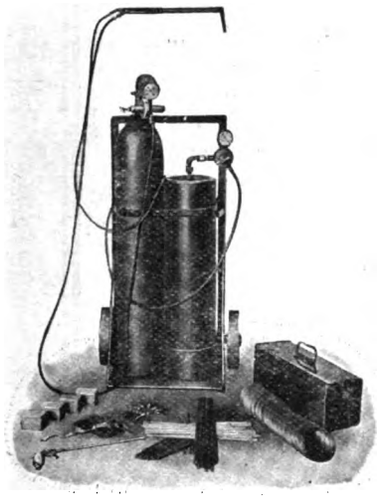
Indispensable to the repairman or the owner that does his own work.

When removing Steering Knuckle Bushings it is not necessary to remove wheel.

Pays for itself in a few minutes.



Jiffy Bushing Extractor for FORDS

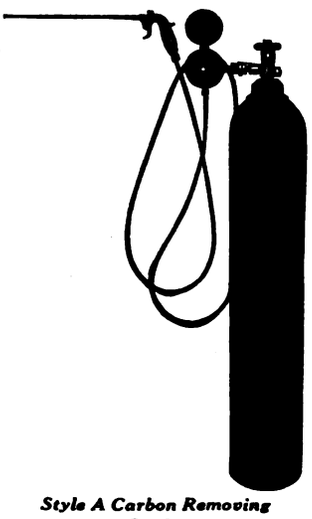


Style A Welding and Carbon Removing Outfit with Truck
(Tanks not included)

Specialists in Oxy-Acetylene Welding Equipment since the method was first introduced.

We carry in stock and can ship promptly outfits for

Welding
Steel Cutting
Brazing
Soldering
Carbon Removing
Lead Burning
Battery Work



Style A Carbon Removing Outfit
(Tank not included)

Ford Type

PISTONS
ALL MAKES

Buick Type 3 3/4"

PISTONS
Standard and Oversize

4 1/8" Overland Type

Write for General Catalogue and Prices. Get Name of Jobber Nearest You Handling Our Line.

The G. H. Dyer Company, Cambridge, Mass.

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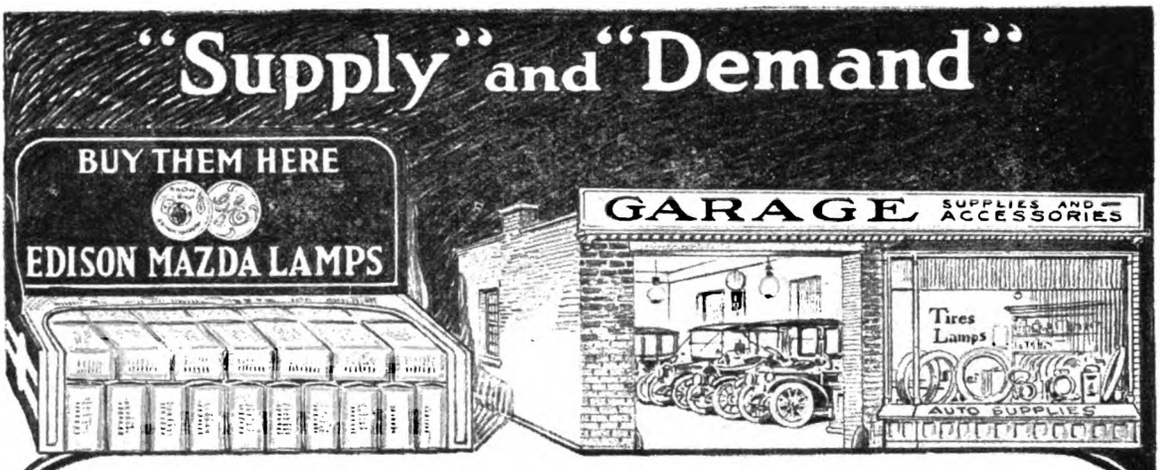


EDISON MAZDA
Automobile Lamp Assortment

Put this assortment on your counter or anywhere it will be seen and begin to do a business that will surprise you with its rapid and profitable turnover.

Here's an accessory that *has to sell*. The law says lamps—lighted lamps. This means new lamps for every motorist, now and then. Lamps get hard usage in automobiles.

The demand is steady and increases with every purchase of a motor car or truck.

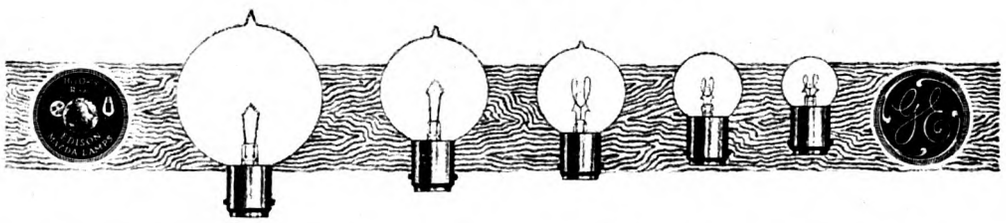
Somebody in your vicinity has to supply this demand. Do you know that *you* can do it at an investment about equal to the price of a tire? You don't have to *sell* EDISON MAZDA Lamps. They sell themselves wherever they're in sight. All you have to do is to hand them out—6 at a time—after ascertaining the make and model of your customers' car. Your EDISON MAZDA Auto booklet tells you or your clerk at a glance exactly what lamps in your Assortment Stock are correct for his car. Your customers will appreciate this service. You can re-order automatically.

EDISON MAZDA AGENTS!

Write for new, 1917 Edison Mazda Auto Booklet, listing lamps for all makes and models of 1915, '16 and '17 cars.

WRITE FOR AGENCY PLAN

EDISON LAMP WORKS
OF GENERAL ELECTRIC COMPANY
Harrison, N. J.
Sales Offices in Principal Cities



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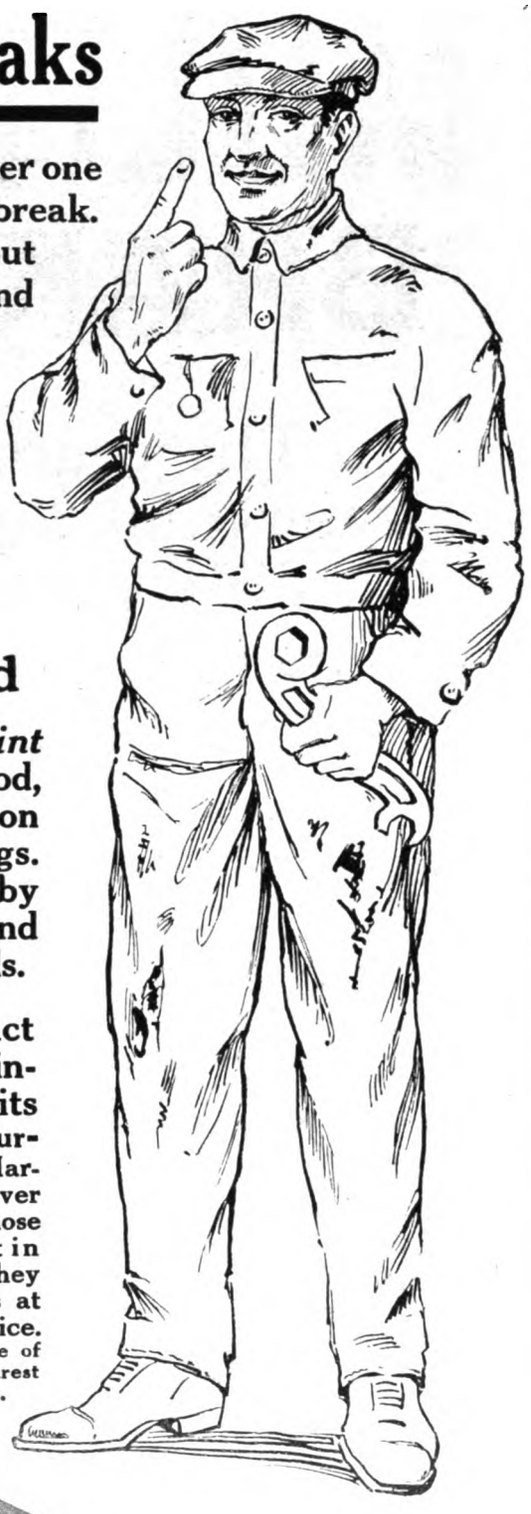
When a Spring Breaks

the car owner naturally doesn't want another one "just like it"—he wants one that *will not* break. You can recommend Harvey Springs without fear or hesitation to your closest friends and most particular customers. They are strong, durable, resilient, easy-riding and have more real quality than any other springs you can buy.



Harvey RACINE SPRINGS Are Guaranteed From End to End

If a spring proves defective *at any point* we will replace it. You can build up a good, profitable spring replacement business on the solid worth and merits of Harvey Springs. Our extensive advertising is being read by car owners in every section of the country and the demand is growing by leaps and bounds.

Every Harvey Spring is an exact duplicate of the spring it is intended to replace and fits with an accuracy that will surprise you. Complete stocks of Harvey Springs are carried by over fifty large jobbing houses, whose service covers every point in the United States. They can fill your orders at a moment's notice. Write for name of your nearest jobber.

FREE

Every Dealer, Garageman and Repairman should write for the Harvey Spring Book which contains a complete list of springs for over 600 of the leading makes and models of cars—gives sizes, weights, measurements, prices, etc., and is an invaluable aid in ordering replacements. Mailed free.

THE HARVEY SPRING CO.

851 17th Street Racine, Wisconsin

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MULTIBESTOS
BRAKE LINING

There are many reasons why dealers find it good business to handle MUTIBESTOS. In the first place, its quality is unquestioned and they know from experience that no brake lining can give better service or greater satisfaction.

MULTIBESTOS is made complete in our own factory. From the mining of the asbestos rock through the spinning of the yarn, the weaving of the fabric—even until the last nail is driven in the packing case—every precaution is made, every safeguard provided to insure safety to the growing army of MULTIBESTOS users.

As a result of this thorough-going policy, MULTIBESTOS combines downright satisfaction to the man who buys and the man who sells it. It is safe to buy. It is profitable to sell. It makes a friend every time the money passes.

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MULTIBESTOS CLUTCH FACINGS

MULTIBESTOS Clutch Facings are made in any size or shape to conform to any type of clutch.

Multiple disc clutch rings up to 30" diameter can be made endless or without special invisible joint. All MULTIBESTOS facings whether for disc or cone clutches are exact in dimensions and perfect in form. They lie flat on the plate and will not swell or stick under any conditions of service. A special treatment makes them withstand the effects of oil and a special weaving process gives them a smooth, even friction surface.

Prices will be given gladly on MULTIBESTOS Facings for any clutch. Give large diameter, width, and thickness of lining for disc facings; give diameter and pitch of clutch for cone facings.

We are also equipped with riveting machinery and other facilities for attaching the facings.

STANDARD WOVEN FABRIC CO. (Factory) **Walpole, Mass.**

New York Branch and Export Offices, 1779 Broadway

Boston, 175 Massachusetts Avenue.
Chicago, 1430 Michigan Boulevard.
Philadelphia, 1309 Race Street.
Atlanta, 6 West Harris Street.

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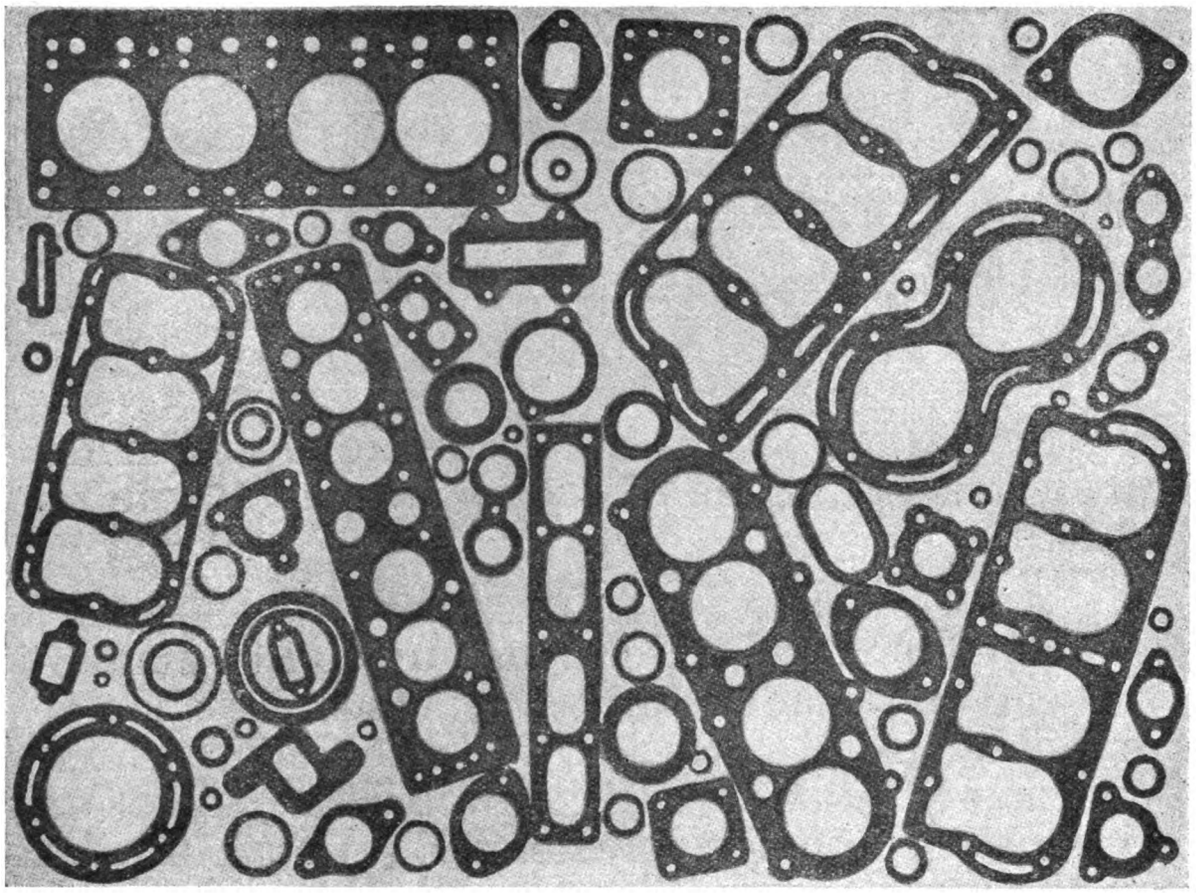

NEVER-LEAK COPPER ASBESTOS-FILLED GASKETS

Get your estimate on your next gasket requirements. You will be agreeably surprised.

For producing absolutely gas-tight joints nothing has ever been invented to compare with Never-Leak Gaskets. You can protect yourself from all worries over compression leaks if you fully equip your motor with these Copper Asbestos-Filled Gaskets.

The Copper gives malleable metal contact surfaces. The asbestos secures a body which retains a powerful spring under compression.

If you have gasket trouble of any nature consult our Engineering Force. This will involve you in no obligation or expense.

Write for our estimates. We are equipped with many thousand special dies such as here shown and can readily produce the gaskets you need.

Have "Never-Leak" on every gasket.

Jobbers and Dealers.

The great problem with the majority of Jobbers and Dealers, garages, repair and machine shops, is obtaining supplies of material. If quality, price and time of delivery are factors that influence purchasing. Write to us today.

THE FITZGERALD MFG. CO.,

TORRINGTON, CONN.

Gasket Dept.

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This is the sign of a Hood Dealer

Quality is Economy

BACK of this sign is an organization that has evolved a new idea in tire making—to build a tire that will always give the user the greatest possible service and durability.

Back of this sign, too, is our co-operation and whole-hearted support of our agent. The agent that ties up with us gets full territorial control, a good margin, enabling him to handle Hood Tires with profit to himself and to us.

Our advertising in newspapers and magazines is to send the purchaser to our exclusive agent, so that all the business goes to him direct.

We shall be glad to correspond with you about an exclusive agency for these quality tires. An attractive proposition awaits you. Write to us today.

Hood Tire Co., Inc., Watertown, Mass.

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Wilmo Manifold

Completely Vaporizes Gasoline

Delivers Many More Miles to the Gallon— GUARANTEED!

The Wilmo Manifold Does All This:

It heats and completely vaporizes gasoline so that gasoline and air in correct proportions enter cylinders as a light, superheated mixture with combustion quality developed to the highest degree.

It increases gasoline mileage 42% to 54% by actual official A. A. A. tests.

It insures the complete utilization of every particle of gasoline in the form of clean, full-power gas.

Provides a warm mixture at the first few turns of the motor. Gets the car away immediately with all cylinders hitting. No stalling, no bucking, no back-firing through carburetor.

Insures a smoother running motor at all speeds. Makes a four as flexible as a six. Makes an old motor and carburetor work effectively without having to overfeed gas.

Insures virtually same increased efficiency from lower grades of gasoline as from costlier grades.

Abolishes virtually all valve and carbon troubles. Tests show practically no hard flint carbon deposits on pistons or around valves, even after a year's use.

Through complete vaporization and utilization of every particle of gasoline, no minute globules of liquid gasoline are left to trickle down into the lubricating oils to destroy their effect.

Saves the cost of having engine frequently cleaned and freed from carbon. Keeps down cost of new parts due to carburetion troubles. Increases car's utility where carburetion efficiency is concerned.

Keeps the car in commission throughout the winter.

A big winter seller.

Made in various sizes. Retails from $7.50 (Ford size) to $15, according to make of car.

Attached in about thirty minutes with a monkey-wrench. No holes to bore.

Extensively advertised in the leading national publications.

Write for results of conclusive official tests, prices, and for selling proposition.

The Whittier Company
First National Bank Bldg., Chicago, Ill.

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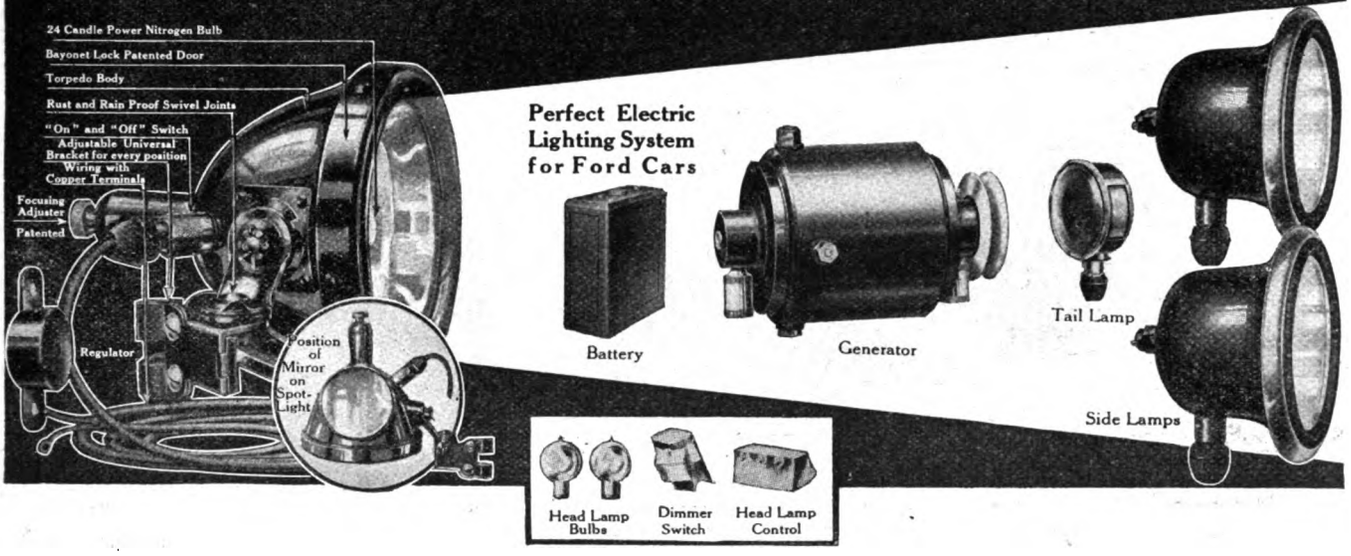
ELECTRIFY YOUR FORD

FROM HEAD LAMPS TO TAIL LAMP IN TWO HOURS



VERSAL PRODUCTS UNIVERSAL CAR

The Biggest Sales Producing Accessory of the year 1917—Hundreds of Thousands of Ford Owners want it. The greatest Dealer Opportunity ever offered

GENOLITE, Type C $29.85

Dealers—There never has been an electric lighting system that you could offer your customers to equal this. Unlimited sales are assured through the completeness of the system, its low price and the big national advertising back of it. System consists of adequate Generator, Storage Battery, Two Handsome Electric Side Lamps, Electric Tail Lamp, Dimmer Switch on Steering Post for Head Lamp Control, Two Extra Nitrogen Filled Bulbs, a Perfect Electric Lighting System that will add immeasurably to the comfort and convenience and safety of Ford Owners. No machine work required to install, no expert needed.

GENOLITE, Type D $31.85

Here is the big improved Perfect Electric Lighting System that meets every exacting requirement of night driving. In addition to an equipment that electrifies the Ford from Head Lamps to Tail Lamp, there is a windshield Spotlight as good as the best on the market and possessing many superior exclusive features. Every Ford Owner will want this system once they know about it. Remember the system includes two handsome Electric Side Lamps, Electric Tail Lamp, Generator Storage Battery, all wires and connections and a beautifully finished, scientifically designed spotlight.

DYNOLITE, $6.85

This is the Windshield Spotlight Ford Owners have been waiting for. It is the first and only practical Spotlight ever made exclusively for the Ford Car. Lights the roadway with a sunlike beam hundreds of feet ahead, behind or around the car. Has patented focusing device, strong universal bracket adjustable to all positions, large mirrorscope for day driving, regulator that provides a steady flow of current at all speeds, duplex cable with copper terminals and 24 c. p. Nitrogen bulb.

CONSTOLITE, $4.85

Every Ford Owner needs Constolite for night driving comfort and safety. Regulates flow of current from Magneto to head lamps. Is operated by dimmer switch on steering post. Provides a practically unvarying light at all engine speeds. Gives full candle power at low speeds. At abnormal engine speeds, automatically cuts down the glare. Dims lights at will of driver. Immediate and assured sales are yours Mr. Dealer as soon as your allotment arrives.

Write at Once for these Versal Products

FOR THE UNIVERSAL CAR ADDRESS DEPT. G.

DETROIT STARTER CO., Detroit, U.S.A.

Our Reputation is Your Guarantee

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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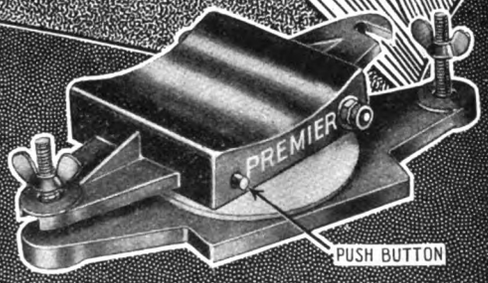
Step Right into Something Good!

—**exceptionally** good—because here are trade-producing products of exceptional merit—of immense value to motorists. Backed by an advertising campaign that is starting an avalanche of sales. Stock them now.

The Premier Automatic Electric Portable Vulcanizer

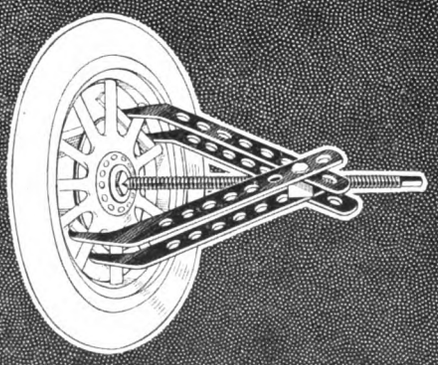
The greatest achievement ever scored in the production of a portable vulcanizer. A vulcanizer that has **proven** itself in performance. Safest—cleanest ever constructed. Nothing else like it on the market. The **one** vulcanizer all can use for all jobs—tubes and casings—something more than a mere puncture tube repairer. Dependable for **satisfactory results.** Nothing to "learn"—no confusing directions to follow. No experimenting. Just prepare cut—connect Premier with battery on car or to home lighting system—**"press little Red Button and Forget it."**

Premier Automatic Shut Off cuts out current—stops work when job is completed. No burning—no "under" or "over" curing. No "doubt"—no danger. Economical in cost and operation. Pays for self in week's time. Doubles tire life. Money-Back Guarantee. Thousands in use. Pleases **every** purchaser. One sale starts a stream of buyers. A product purchasers like to "Boost" and **do** boost. Retails at $3.50—within reach of all. Liberal discount to dealers.



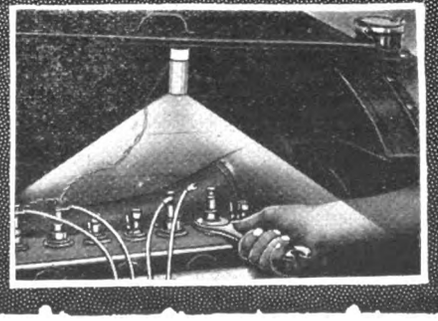
"LITTLE GIANT"— Pulls any Gear or Wheel—Does the Business of Two Ordinary Pullers—Better.

In shortest possible time—with least worry and work. No repair shop is properly equipped without it. Does away with necessity of "special" pullers—their expense and inconvenience. Simple in construction—adjusted in a jiffy to pull **any** gear, wheel, bearing or pulley. Gives powerful direct straight pull. Never slips or twists—makes inside pulls easy. Does a hundred and one things in a time and temper-saving way. Made of Drop Forge steel—a giant of strength and service. A speedy seller—reasonably priced. Retails at $10. Get our attractive dealers' proposition.



The Light That Lets You Work With Both Hands.

The Premier "Stickalite" takes lighting bother out of your hands. A wonderful little 3 oz. magnetic light that sticks tight wherever placed on metal. Throws flood of clear, bright light where it is wanted and KEEPS it there. Reflector tube protects bulb—slim chance for breakage. Complete with 6 C. P. lamp, 10 ft. flexible cord—plug to fit any socket on car. When ordering specify style plug wanted—single or double contact—"push and turn" or screw thread. No motorist should be without it. Few ARE after SEEING it. Retails at the amazingly low price of $1.00.



Premier Electric Co., 4038 Ravenswood Ave , Chicago, Ill.

Gentlemen:—Send complete descriptive matter on Premier Products with prices and Dealer's Discounts.

Name.....
St. Add.....
City..... State.....
Jobber.....

BRANCHES: Northern Electric Co., Ltd., Montreal, Canada. Asch & Co., Inc., 1779 Broadway, New York. Hughson & Merton, Inc., San Francisco.

MOTORISTS

Order Premier products direct from this ad, or send for further particulars if your dealer won't supply you.

DEALERS INVESTIGATE

our interesting and money-making proposition.

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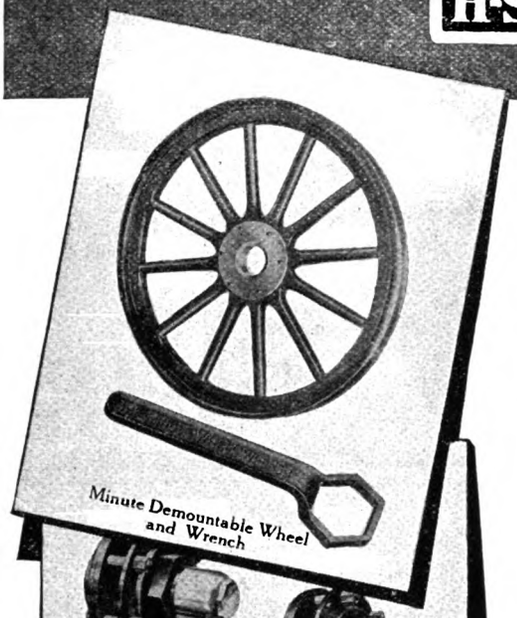
H-S Repair Parts
for Ford and Overland Cars


Minute Demountable Wheel and Wrench

Four Minute Wheel Hubs—to replace Ford Hubs

H-S Letts Manifold Heater for Ford Cars

H-S Page from Repair Parts Catalogue

The Minute Demountable Wheel
For Ford Cars

It's a certainty that every Ford owner will be interested in seeing a demonstration of the wheel that enables tires to be changed on the darkest, stormiest, coldest night, as well as in sunshine **in race track speed.**

It's equally certain that once he has seen this demonstration, how you change tires in sixty-seconds, *with your eyes shut,* he will want his Ford equipped with the Demountable Wheel in preference to any form of demountable rims.

You can Demonstrate these Facts

Mr. Dealer, just as soon as your allotment arrives. Get after your jobber for it—Then we help you with advertisements in the big national magazines.

This is the equipment: One wheel to carry extra tire already inflated—(tire not supplied) one extra flange, one wrench, four Minute hubs front and rear, to replace Ford hubs.

Price Complete $30.00

H-S Letts Manifold Heater

For Ford Cars—is guaranteed to give from 20 to 40% more mileage in gasoline, to reduce carbon 50%, lessen spark plug troubles, to make a cool, even, smoother running engine. The heater is a two unit chamber enclosing intake, heated by tube from exhaust, easily taken apart to clean which is an essential feature for the success of any manifold heater. *Summer driving-comfort in Winter, a cool, even pulling quiet engine in Summer. No more "boiling" radiators.* **Style B for the Chevrolet also ready.**

Price $6.00

H-S Repair Parts now typify in the Ford owner's mind highest quality in material and workmanship and perfect fitting parts. Sold through the Jobber.

Dealers—All the above are sold only through [H-S] Jobbers. Get in touch with the nearest [H-S] jobber for your allotment. Booklets on the Minute Wheel and the Letts Heater will interest you as will our price list of [H-S] Repair Parts. Send for all three.

HIGHEST QUALITY H-S PROMPT SERVICE

HILL-SMITH METAL GOODS COMPANY
MANUFACTURERS OF MOTOR PARTS AND ACCESSORIES
REPAIR PARTS FOR THE FORD AND OVERLAND CARS
BOSTON, MASS.

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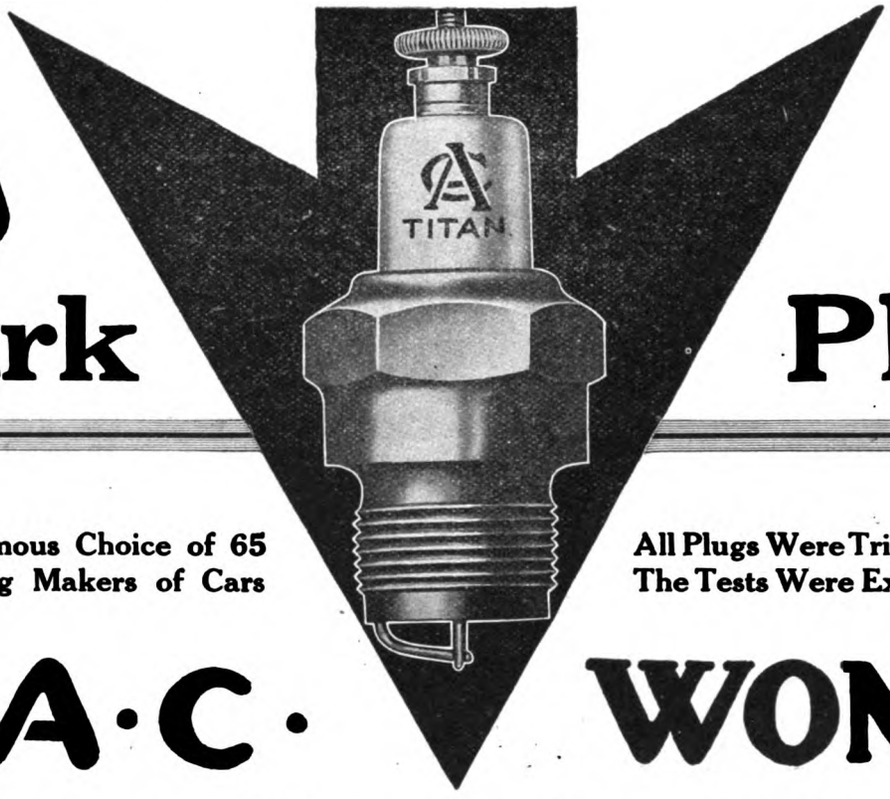
The Survival of the Fittest

A C Spark Plugs



Unanimous Choice of 65 Leading Makers of Cars

All Plugs Were Tried Out— The Tests Were Exhaustive

A·C· WON

At the Shows and Always, These Cars Are A C Equipped

Cadillac	Buick	United Truck	Bour-Davis	G. M. C.
Pierce-Arrow	Oakland	Wilcox Trux	Lexington-Howard	Diamond T Truck
Packard	Oldsmobile	National	Murray	Netco Truck
Marmon	Jeffery	Velie	Monroe	Gramm-Bernstein Truck
Hudson	KisselKar	Jackson	Signal Truck	Brockway Truck
Chalmers	Premier	Westcott	Sandow Truck	Federal
Hupmobile	Knox	Pathfinder	Sterling Truck	Abbott
Haynes	Jordan	Chandler	Chase Truck	Gabriel Truck
Dort	Liberty	Chevrolet	Moreland Truck	
Cole	Crane-Simplex	Apperson	Republic Truck	
Reo	Dodge Brothers	Davis		
Paige	Stearns-Knight	Daniels		
Peerless	McLaughlin (Canada)	Detroiter		
Saxon	Singer	Paterson		
Stutz	Stephens	McFarlan		
Pilot		Scripps-Booth		

MR. DEALER: Your customer is glad to take your advice; he knows YOU KNOW

Look for the "A C" Burnt Into the Porcelain

Champion Ignition Company

Flint, Michigan

The Standard Spark Plug of America

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VOL VI. PAWTUCKET, R. I., JANUARY 1916. No. 9

World's Greatest Car Show Held at Chicago

4000 Dealers From All Parts of Country Centre in Chicago. They Predict 1917 Will Be Greatest Selling Year Ever Known, Especially in Agricultural Districts Where $10,000,000,000 Worth of Crops Were Produced

FROM many viewpoints the big National automobile show at Chicago might be considered the greatest ever held in the world. In size and magnificence it was certainly without a peer, while as a business proposition it might be termed the greatest sales convention ever held in connection with the automobile industry, as thousands of dealers attended from all over the country.

The dealers from the Central West, West and South and Northwest always make the Chicago show their point of rendezvous. Contracts are made for the new year by many dealers and new agencies are established. The negotiations with dealers are always a big feature of the Chicago exhibition.

This year's show was conducted on a scale in keeping with its importance. The decorative scheme alone, on which the decorators had worked nearly a year, cost approximately $50,000, and turned the interior of the Coliseum into a Mediaeval English castle. The effect was carried out realistically by the use of columns, fixtures, panels of scenic art glass and large panels with scenes symbolical of the motor industry. A similar decorative scheme was also carried out in the First Regiment Armory and the Greer building.

The exhibits were similar to those seen at the New York show, only being set in an entirely different environment. The colors in the decorations consisted of black, ember, green and old rose blended into a rich effect, while the massive columns which marked off the spaces lent harmony to the general appointments. This setting seemed to be more suited for showing cars than that used in Grand Central Palace in New York, as the colors were more in harmony with the body finishes and trimmings.

Over 400 different models were on display, ranging in price from $385 to $7000 and including all body types that are at present in use. The cars exhibited are listed in the accompanying table.

There were 261 exhibitors when the show opened, of which number 96 exhibited complete cars and 165 were dealers or manufacturers of accessories. Six-cylinder cars predominated, 56 different makes being displayed as compared with 42 four-cylinder cars, 16 eights and seven 12's. The Glide, Woods-Dual Power car and Pan-American were the new cars that were seen at the show.

SIX-CYLINDER CARS.

Auburn	Abbott	Apperson
American	Ben Hur	Buick
Columbia	Chalmers	Crow-Elkhart
Chandler	Detroiter	Davis
Elgin	Empire	Franklin
Hudson	Grant	Glide
Jordan	Jeffery	Haynes
Lozier	KisselKar	Jackson
Mitchell	Lexington	Hollier
Moon	Marmon	Liberty
Oakland	National	McFarlan
Paige	Owen	Pierce-Arrow
Roamer	Pathfinder	Premier
Reo	Overland	Studebaker
Sun	Saxon	Westcott

FOUR-CYLINDER CARS.

Buick	Allen	Case
Drexel	Dort	Dodge
Empire	Dixie	Hupmobile
Fiat	Elcar	Inter-State
Ingram	Harroun	Mercer
Lozier	Jeffery	Moline
Maxwell	Monroe	Pullman
Overland	Oldsmobile	Regal
Reo	Princess	Stutz
Saxon	Scripps-Booth	Woods
Briscoe	Emerson	Stearns

EIGHT-CYLINDER MODELS.

Cadillac	Jackson	Oakland
Cole	Chevrolet	Cunningham
King	Apperson	Hollier
Peerless	Majestic	Oldsmobile
Stearns	Regal	Standard
	Scripps-Booth	

12-CYLINDER MODELS.

Austin	Enger	Hal
Haynes	National	Packard
	Pathfinder	

Over 4000 dealers from all parts of the country registered during the week, including distributors from New England, New York, the Pacific Coast and a delegation from Texas, which arrived on a special train from San Antonio.

The past year was the most prosperous on record for the dealers in the agricultural sections, where the bulk of the big 1916 production was disposed of and with high prices prevailing for all agricultural products, these distributors are looking forward to a greater demand for motor cars this year than ever before. The farmer was slow to take up the motor car, but when he did grasp the new idea in transportation, he went for it strong, with the result that many of the agricultural states have more cars per capita than the other states.

Chicago, being the shipping and banking centre for this vast wealth producing area, the automobile show there naturally has developed great importance as a business institution, and it is usually made the occasion by many large manufacturing companies for holding conventions, meetings and annual gatherings of representatives and distributors. These activities add much interest to show week there and are instrumental in bringing much larger attendance.

Special exhibitions were held by many distributors and the second annual Chicago Salon was staged in the Elizabethan room of the Congress Hotel, where three new cars were included in the exhibit. Two made their initial appearance, these being the Disbrow, a creation of Louis Disbrow, a well known racing driver, and the Fageol, which is equipped with a six-cylinder Hall-Scott aviation motor that develops 150 horsepower. The Fageol, which is made in Los Angeles, is guaranteed to make 100 miles an hour and the chassis alone is priced at $9500. The other cars in the salon were the Locomobile, Brewster, White, Simplex, Murray, Daniels, Lancia, Marmon and Doble.

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Record Show at Philadelphia

117 Exhibitors Displayed Cars and Accessories to More Than 100,000 Motor Enthusiasts.

It is estimated that 100,000 persons of every degree of wealth and age visited the 16th annual exhibition of motor cars in Philadelphia thereby breaking all existing records for that city. Two outstanding factors were responsible for the record, the fact that prosperity is rampant in that section, as everywhere else, and that the display was held in the largest single story building under one roof in the Quaker city, the Commercial Museums building.

The increase over last year's show can be gauged by the fact that the Commercial Museums building has 75,000 square feet of floor space as compared with the 50,000 square feet available in 1916, and that this space was thronged by visitors and cars and accessories. Capacity crowds were the rule every day of the week, from Jan. 12 to the 20th.

In magnitude and importance the Philadelphia show approaches the New York and Chicago exhibitions. There were 117 exhibitors, 66 of which displayed cars in one form or another and 51 showed accessories and equipment. Approximately 280 cars were on exhibition, there being about an equal number of closed and touring models. Roadsters totaled about 60, and there were more than 30 stripped chassis shown.

The Philadelphia Automobile Trade Association, which staged the show, faced the problem of providing room for the overwhelming number of applications for space, and met the conditions only after prodigous labor. Before the work was done the association had expended about $40,000, half of which went toward installing an adequate heating and lighting system in the Commercial Museums building.

About $9000 of the total amount was spent for decorations and the result showed that the money was well expended. Philip S. Tyre designed and executed the decorations, he borrowing from the Orient, mainly Japan, for his ideas.

As regards the cars shown, the Philadelphia exhibition might be called a replica of the New York show, in that the majority of models shown in Grand Central Palace were also displayed in the Commercial Museums building.

BADGER BRASS SELLS TO HALL LAMP COMPANY.

The C. M. Hall Lamp Co., Detroit, Mich., has bought the plant and business of the Badger Brass Co., Kenosha, Wis., and becomes the largest manufacturer in its line.

G. A. Yule, C. G. Koch and R. H. Wells, president, vice president and treasurer, respectively, of the Badger company, have retired and the business will be managed by the Hall company officials, with William F. Anklam, secretary and treasurer, in charge of both plants. G. A. Mahler will manage the Kenosha plant, the products of which will keep the Badger name.

The Badger Brass Mfg. Co. was formed 11 years ago with a capital of $200,000.

J. F. Hartz, who negotiated the deal, is president of the C. M. Hall Lamp Co., which was founded in 1908 with a capital of $750,000. F. T. Buchanan is vice president and J. L. McDonnell, treasurer.

ROAD CONVENTION TO BE HELD IN BOSTON.

An attendance of from 3000 to 4000 is expected at the American Road Builders' Association convention to be held in Boston from Feb. 5 to 9, at the Copley Plaza Hotel and the Mechanics' building.

The eighth National Good Roads show will be held in the Mechanics' building in connection with the convention, under the auspices of the Good Roads Congress. Additional interest in the convention attached from the fact that the president of the American Road Builders' Association this year is Arthur W. Dean, chief engineer of the Massachusetts Highway Commission.

Firestone Has Huge Surplus

Total Assets of the Akron Tire Maker Placed at $34,360,848, with Surplus of $18,306,429.

The Firestone Tire and Rubber Co., Akron, O., according to its balance sheet on Oct. 31, 1916, had total assets of $34,360,848 and a surplus of $18,306,429 on that date. The balance sheet was as follows:

Assets.

Realty and plant	$10,687,963
Investments	647,923
Inventory	9,715,950
Subscriptions of 6 per cent. preferred cumulative stock	5,008,775
Cash	325,490
Notes and accounts receivable	6,829,632
Due from employees for stock bought	1,107,083
Reserve	38,032
Total	$34,360,848

Liabilities.

Preferred stock	$5,000,000
Common stock	3,000,000
Notes payable	5,245,844
Accounts payable	1,271,305
Taxes, interest, etc.	386,852
Welfare and pension reserve	1,000,000
Insurance reserve	150,000
Surplus	18,306,429
Total	$34,360,848

ORDERS FOR PAIGE CARS UP 300 PER CENT.

At the meeting of the stockholders of the Paige-Detroit Motor Car Co., Detroit, Mich., it was announced that orders for the Paige cars had increased 300 per cent. in the past year. It was also reported that 39 per cent. in cash dividends were paid in 1916 and the capital stock was increased 108 per cent.

N.A.A.A.J. Meets at Chicago

Second Annual Convention Was a Big Success from Every Standpoint and Well Attended.

The second annual convention of the National Association of Automobile Accessory Jobbers was held at the Congress Hotel in Chicago during the week preceding the opening of the National automobile show in that city.

During the first two days of the convention the various committees held meetings at which they discussed matters that later came before the general session for action and consideration. The main session opened on Thursday, at which the important matters affecting the organization's welfare were brought up.

One of the subjects that received lengthy consideration was the question of whether the trade should accept drafts payable by dealers in 30 days or more, similar to a system employed abroad and indorsed by the Federal reserve banks in this country. After considerable discussion the matter was referred to the finance committee.

Great interest was shown in the revelation of a new scheme that is being worked on the manufacturers to secure goods to be sold to price cutting distributors. The method employed in hoodwinking the manufacturers, it was explained, was to make them think that the goods were for the purpose of filling war orders, and that while the first order was not of enormous proportions, others of magnitude would follow. The buyer having obtained the products from the manufacturers with these false representations, then sells the goods to the price cutting distributors below the market.

The various standing committees who did not report at the Wednesday session submitted their findings at this meeting and they were referred to the committees again after discussion. Thursday evening the annual dinner was held, followed by dancing. Friday morning unfinished business was taken up.

JENKINS SPRING WILL HAVE NEW PLANT.

The Jenkins Vulcan Spring Co., St. Louis, Mo., increased its business during the past year over 400 per cent. On Feb. 1 the stockholders will receive a stock dividend of 100 per cent.

To meet the increased demand for Jenkins springs, the company is seeking a new plant with four times the floor area of the present factory. Distributing branches will be opened in Harrisburg, Penn., and Des Moines, Ia., in February. The company has just closed a contract with the Scovel Iron Store Co., San Francisco, to handle its spring in California.

The company carries in stock 588 different types of springs for practically 95 per cent. of all cars in use.

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Huge Market In the Southwest

Five States Gained 55 Per Cent. in Registrations in Last Eight Months of 1916.

A recent compilation of statistics covering the registration of automobiles in Texas, Oklahoma, Arkansas, Louisiana and New Mexico, shows a gain in the eight months ending Dec. 1 of 101,071, or 55 per cent. The total registration in the three states on Dec. 1 was 282,762.

The Southwest has enjoyed tremendous prosperity during the past year, which has manifested itself in large purchases of automobiles, tractors and other products. Purchases of automobiles have been especially heavy, all the states in that section of the country having recorded gains in registrations ranging from 48 to nearly 100 per cent.

During the period from March 1, 1916, to Dec. 1, 1916, the registrations in Oklahoma increased from 26,700 to 50,849, a gain of 24,149, or nearly 100 per cent. In Texas in the same period registrations increased from 129,743 to 191,375, a gain of 61,632. In the other three Southwestern states the registration figures are as follows:

	Dec. 1-16	March 1-16	Gain
Arkansas	15,423	8,448	6,975
Louisiana	16,887	11,300	5,587
New Mexico	8,228	5,500	2,728

According to the 1910 Federal census, Texas had 3,204,911 white inhabitants. The state has no so-called state license. An automobile is registered by the payment of 50 cents to the county and this license is perpetual.

An analysis of the statistics, which were compiled by the Holland Pub. Co., shows that the largest increase in the registration figures during the period named was recorded in the counties that are largely given over to agricultural pursuits. This has also been true throughout the Southwest, which has developed as a large market for both motor cars and accessories.

NEW ELGIN PUBLICATION MAKES ITS INITIAL BOW.

The "Elgin Progress," the house organ of the Elgin Motor Car Corp., Chicago, has made its initial appearance in the trade. It is a bright and newsy publication, intended "to promote close co-operation among all those connected with the organization," according to Editor R. S. Marsh.

BURDICK OUT OF STANDARD WOVEN FABRIC CO.

A. H. Burdick, who has been treasurer of the Standard Woven Fabric Co., Walpole, Mass., for a number of years, has disposed of his interests in the company and tendered his resignation, which has been accepted. Mr. Burdick has also resigned as president of the Brake Lining Manufacturers' Association.

Goodrich Co., Earns $10,000,000

The Total Earnings for 1916 on the Common Stock Were Equal to About 13 Per Cent.

The B. F. Goodrich Co. earned nearly $10,000,000 in 1916, or $2,500,000 less than during the preceding year. The decline in the net earnings is attributed to increased manufacturing costs. The earnings for 1916 were equal to about 13 per cent. on the common stock.

A dividend of one per cent. on the common and 1¾ per cent. on the preferred stock was declared for the next two quarters.

Sweeping Changes In Engine Design

Prof. Fishleigh Tells S. A. E. That Radical Departures Are Necessary in Construction.

Prof. Walter T. Fishleigh, associate professor of automobile engineering at the University of Michigan, in a paper presented at the winter meeting of the S. A. E. in New York City during the early part of the month, predicts that sweeping changes are necessary in the design of gasoline engines and if improvements are not gained in this way the type of engine used must be changed altogether.

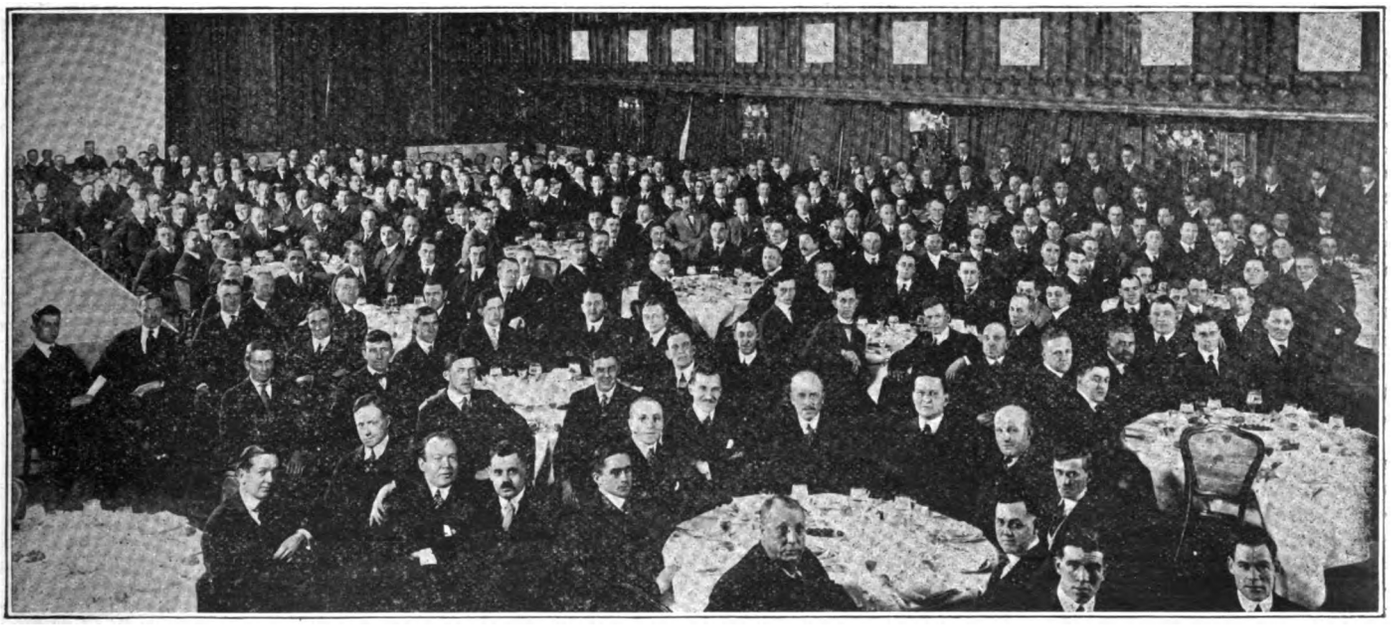
In his paper Prof. Fishleigh gave the results of his exhaustive tests into the efficiency of the gasoline engine. He said that his tests showed that only 10 cents worth of power is actually developed from $1 worth of gasoline in the modern engines at the flywheel and delivered to the transmission box.

Speaking of these tests, he said: "The more we study characteristics of the present type of engine, and the more we inquire into the reason for its manufacturing status quo, the more we are convinced that sweeping improvements in design must come, or the type be changed altogether."

The remaining 90 cents worth of fuel, he said, was developed into power that was dissipated in the form of heat losses through the exhaust, in cooling water and air and in friction.

STEWART-WARNER EARNED $2,215,043 IN 1916.

The earnings of the Stewart-Warner Speedometer Corp., Chicago, Ill., for 1916, were $2,215,043, or $184,423 more than in 1915. After deducting the dividend payments for the preferred the earnings are equal to over 21 per cent. on the $10,000,000 common stock.



The Men Behind the Hupmobile, Factory Representatives, Territorial Distributors and Salesmen of the Hupp Motor Car Corp., Detroit, Gathered at Luncheon in a Banquet Room of Hotel Biltmore, New York City, in Automobile Show Week.

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Continental Motors Reincorporates.

New Capitalization Is Placed at $18,500,000 and Plant Capacity About Doubled.

The Continental Motors Corp., with $18,500,000 capital, will soon be incorporated under the laws of Virginia and will succeed the Continental Motors Co. of Detroit, although no change in ownership or management will result.

The stockholders of the latter company recently approved the action of the directors and practically all deposited their stock to be exchanged for the shares of the new concern when issued. The capital of the new company will be divided into $3,500,000 preferred and $15,000,000 common. Three shares of this new common stock and $5 in cash will be given for each share of common stock in the present company. The present outstanding issue of $50,000 preferred is to be retired and the new preferred stock will be offered through a syndicate.

It is understood that the action was taken to meet new capital requirements and that the output of the Continental plant will be doubled.

COMPANY FORMED TO MAKE BELMONT CAR.

The Belmont Motor Car Co., Toledo, O., has been incorporated with a capital of $125,000 and is planning the erection of a large factory in that city for the manufacture of a new car which was designed by Andrew A. Lehr, who is president and general manager of the company. B. F. Gantz is vice president and A. H. Miller secretary and treasurer. These officers, with A. T. Wilson and R. W. Beaschler, make up the directorate.

NEW DAY-ELDER CORP. HAS BEEN ORGANIZED.

The Day-Elder Motors Corp. of New Jersey has been formed with a capital of $1,000,000 to take over the business and assets of the Day-Elder Motors Co. of Newark. The stock of the new company is divided into $500,000 preferred and $500,000 common. P. K. Hexter has been elected vice president, sales manager and director in the new company and has headquarters at 1457 Broadway, New York City. He was eastern sales manager of the Republic Motor Truck Company for several years.

HOOD TIRE COMPANY TO TRIPLE PRODUCTION.

The Hood Tire Company, Watertown, Mass., manufacturers of Arrow Tread tires, is erecting additional factory buildings which will provide 80,000 square feet of floor space for manufacturing operations. The additions to the plant will make possible a production of 2000 tires daily. At present the factory is turning out 300 tires a day and the addition now nearing completion will allow for a production of 900 tires daily, but the plans call for four stories more on the foundations laid for the one-story extension, 64 feet wide. The new buildings are of massive structural steel bridge construction with concrete block walls and reinforced concrete floors. The expansion of the plant has been made necessary by the enormous increase in the company's business, which last year was 400 per cent. more than during the year 1915.

HYATT ISSUES SCIENTIFIC SERVICE FOLDER.

The Hyatt Roller Bearing Co. has issued a neat little folder entitled "Scientific Service—a Sidelight on Hyatt Sales Methods," in which a brief description is given of the scientific manner employed by the Hyatt company in giving efficient bearing service for tractors, and how the Hyatt organization is trained to serve customers.

U. S. Rubber Issuing Bonds

$60,000,000 Worth Offered — Company Shows Total Assets of More Than $124,000,000.

The United States Rubber Co. is offering an issue of $60,000,000 first and refunding mortgage five per cent. gold bonds series "A" at 96¾ per cent. and accrued interest to date. Interest on the new bonds will be paid Jan. 1 and July 1 and all, but not part, of the issue outstanding may be redeemed on any interest date, on and after Jan. 1, 1920, upon 90 days notice at 105 and interest.

In the announcement of the issue the company showed total assets of $124,613,606.61. The net earnings of the company and its subsidiary companies, available for interest for the fiscal year ending Dec. 31, 1916 (partly estimated), were $12,500,000, as compared with $11,539,313.10 in 1915.

POPPY CAR TO BE MADE BY EISENHUTH COMPANY.

The Eisenhuth Motor Co. has been organized in California to build the "Poppy Car," which will incorporate many new features according to the principal founder and promoter of the business, J. W. Eisenhuth. The engine has five cylinders and said to be able to start itself. The drive is direct to the rear axle by a newly patented gear which does away with the use of differentials and the transmission gearset. The motor will have but 79 parts, according to the inventor, as compared with about 225 parts in the average gasoline engine, and with the elimination of the many parts in the driving mechanism, 1202 parts that are ordinarily found in the gasoline car have been abolished. The factory will be located at San Pedro on Los Angeles harbor on a site covering 250 acres. The "Poppy Car" will sell for $650.

Standard Parts Still Absorbing

Western Spring and Axle Co. Is to Be Taken Over, Making Huge Concern of Standard.

The Standards Parts Co., which was recently organized from a combine of the Perfection Spring Co. and the Standard Welding Co., has practically completed negotiations for the purchase of the Western Spring and Axle Co. This deal, when consumated, will make the Standard Parts Co. not only the largest producer of springs in the world, but also one of the leading producers of automobile parts of various description.

Negotiations for the sale have been pending several weeks and the stockholders of the Western Spring and Axle Co. have voted in approval of the sale, 72 per cent. favoring it. Work is now being carried on to consumate the deal, although it will be some time before all the details have been arranged.

The Western Spring and Axle Co. owns and controls the Armstrong plant at Flint, Mich.; the Hess-Pontiac plant at Canton, O.; the Hess Spring and Axle Co. at Carthage, O., and the Cleveland Canton Spring Company at Canton, O.

VICTOR STORAGE BATTERY INCREASES CAPITAL.

The Victor Storage Battery Co., Rock Island, Ill., will increase its capital stock to $100,000. At the meeting of stockholders which authorized the increase the following officers were elected: President, B. E. Winters; vice president, G. E. Brown; secretary, B. F. White; treasurer, T. D. White.

TECHNICAL SCHOOL FOR AUTO DRAFTSMEN.

The fall term of the Technical School for Automobile Draftsmen and Mechanics, 20 West 44th street, New York City, which closed in December, was the most successful in the history of the institution. The attendance of the day class was nearly 100 per cent. and the evening class 87 per cent.

The winter term, which commenced Jan. 2, continues to April 11 inclusive. Inquiries regarding the courses, which include a correspondence course, should be directed to Andrew F. Johnson.

The Vacuum Oil Co. has published its 1917 edition of its booklet entitled "Correct Lubrication." It is a 56-page book, printed in two colors and contains such subjects as Methods of Lubrication; Engine Troubles, Their Causes and Remedies; Chassis Troubles, Their Causes and Remedies, and many other chapters of value to owners of any make of pleasure cars and motor trucks. Copies of the booklet can be obtained free of charge, either from the Vacuum Oil Co., 61 Broadway, New York City, or its branches throughout the country. The book is unique and valuable.

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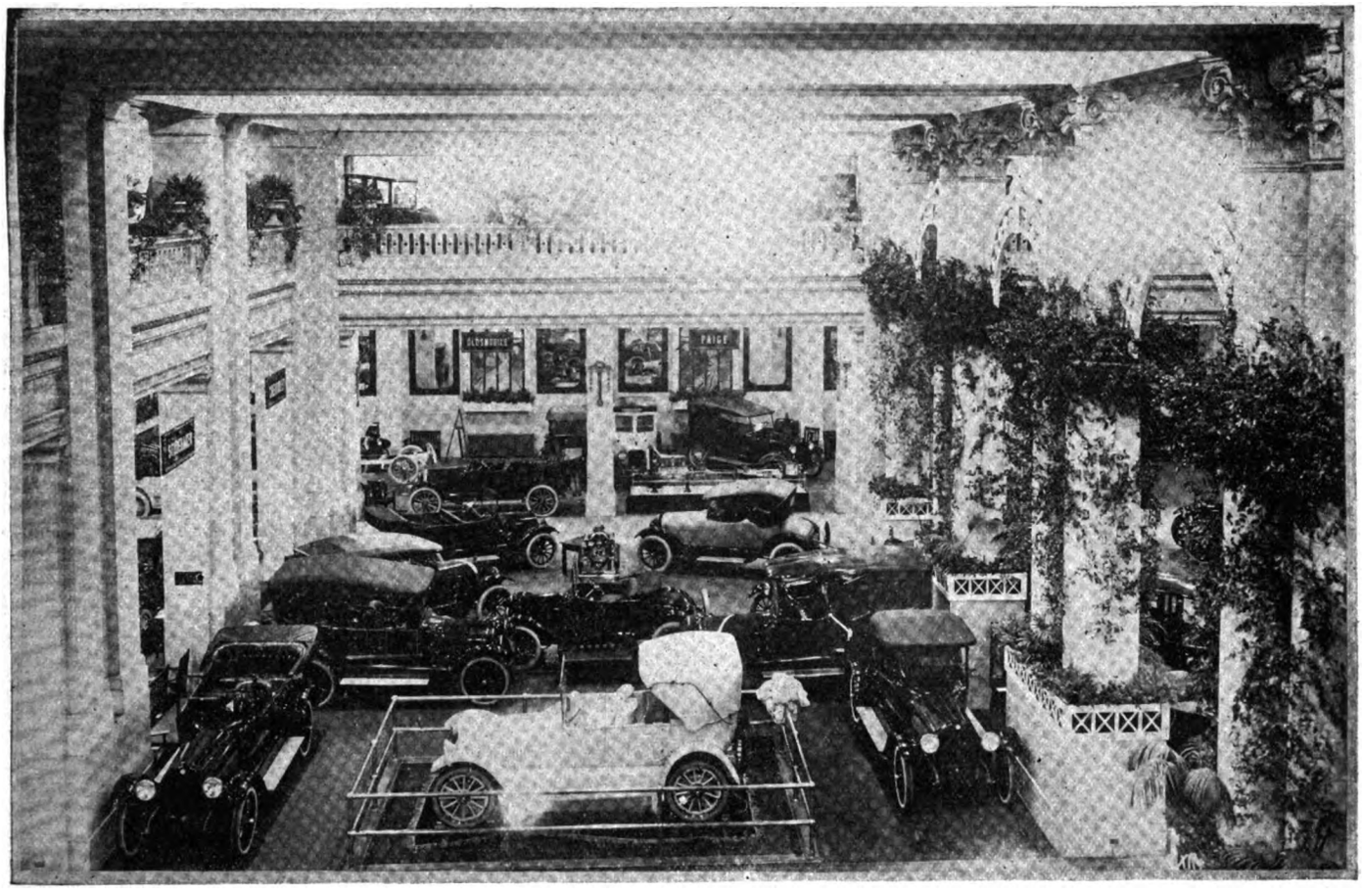


The Grand Court at Grand Central Palace, Showing Studebaker Gold Car in the Foreground.

New York Show Breaks All Previous Records.

Palace Held More Cars and Chassis Than at Any Other Exhibition, and Disclosed Four Absolutely New Makes and Eight New Models—Accessory Exhibits a Big Factor.

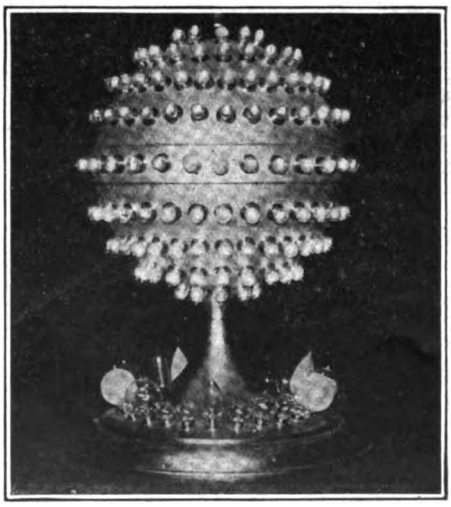
THE 17th annual automobile show held in the Grand Central Palace in New York City was easily the largest and most successful exhibition of automobiles and accessories ever held in the world, and it was typical of the present state of prosperity in the motor car industry, which is unparalleled.

The best and most definite idea of the size and scope of the big show is gained from the following array of figures: 97 car exhibitors; 342 cars and chassis; 226 accessory displays; 144 six-cylinder cars; 120 four-cylinder cars; 48 eight-cylinder cars; 14 12-cylinder models; 13 electrics; 2 steam cars.

Four New Makes Shown.

Among the exhibitors there were four who displayed their product for the first time and eight new car models were shown. The total of 342 cars and chassis exhibited compares with 322, the previous high water mark, established at last year's show. Accessory exhibits, however, fell off in volume, largely on account of the fact that the increased number of automobile exhibits had encroached upon the space to the extent that accommodations were available for only 226 exhibitors as against 306 in 1916.

The attendance figures afford an interesting item for analysis to arrive at an explanation of the real function that the New York show occupies in the great billion dollar motor car industry. There was an attendance of over 400,000 people, which is a record for automobile shows. This number represents about 25 per cent. of the total number of persons who bought cars during the 1916 season, but has little relation to the amount of business that was transacted at the show during the week.



One of Features of the J. H. Faw Exhibit at New York Show.

A Dealers' Exhibition.

While primarily the show was inaugurated to introduce new models to the public, it has gradually evolved into a big convention of dealers and manufacturers in both automobiles and accessories. There are about 30,000 dealers and a large number attend the show annually and place their contracts. As these men last year sold over one billion dollars worth of motor products, the position that they hold in relation to the show is evident. The business of this nature transacted at the show this year was the greatest on record and portends a season which will eclipse the one just closed.

Dependent upon and closely affiliated with this enormous industry is the accessory business, which has steadily grown in size and scope until it ranks as

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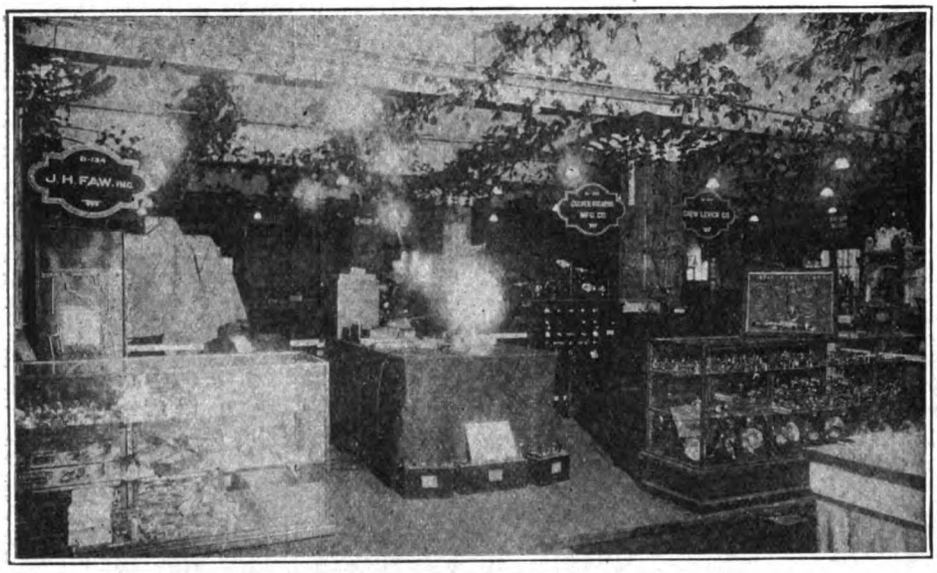


One of Busiest Spots in the Accessory Division, J. H. Faw Booth on Fourth Floor.

one of the largest supply trades in the country. The leading organization in this industry, the Motor and Accessory Manufacturers, through its members, occupied nearly 6000 square feet more of space in which to exhibit their products than ever before, although owing to the large individual exhibits not as many spaces were available.

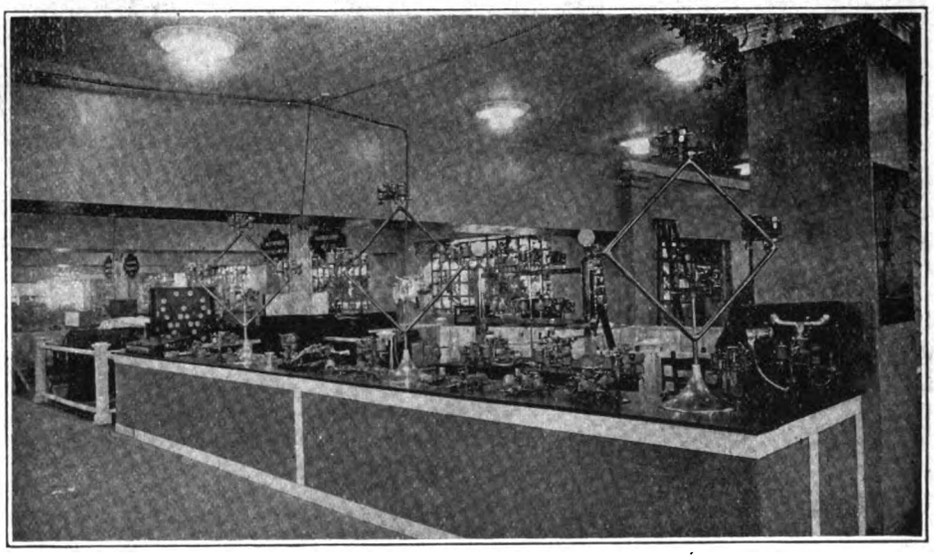
Six-Cylinders Predominated.

Six-cylinder cars predominated at the show, as did also touring car models. There were 144 six-cylinder cars as compared with 120 with four-cylinder engines and 128 touring cars and 67 roadster models. Forty-eight eight-cylinder cars and 14 with 12 cylinders make up the remainder of the total of gasoline cars exhibited, excluding the 13 electrics and the Doble steam car.

Over 20 per cent. of the total car exhibits were new models, but the public has become more or less familiar with all of these excepting several which made their debut at the show for the first time. In the latter class are the Majestic, made by the Majestic Motor Co., Inc., New York City; Frontmobile, made by the Bateman Mfg. Co., Grenloch, N. J.; Dey Electric, exhibited by the Dey Electric Corp., 45 Broadway, New York City; the Puritan, made by the Puritan Motors Co., Framingham, Mass.

The Majestic, which is an eight-cylinder car, was exhibited with a five-passenger touring model with Victoria top. An unusual method of applying the power is the feature of the Frontmobile, which drives through the front wheels. The Dey Electric is a light and simple passenger car, manufactured by the Ward Electric Vehicle Co., and is the lowest priced electric on the market. The feature of the car is the rear axle, which was designed by Charles E. Steinmetz, the well known electrical engineer associated with the General Electric Co.

The widely heralded Studebaker gold car, which is said to have cost $30,000 to produce, was the cynosure of all eyes, set as it was in a conspicuous place in the Grand Court upon a beautiful rug and surrounded by a railing. The car is finished in white, including the Victoria top and aside from its costly embellishments, is an excellent example of the body builder's art.



How the Rayfield Carburetors Were Displayed.

Crew Levick Occupied a Prominent Position.

Abner Doble's new steam creation, the Doble car, made by the General Engineering Co., Detroit, naturally came in for the lion's share of attention, owing to its extraordinary mechanical features, including a power plant of exceptional power and flexibility. It is doubtful if any exhibit received as much sincere inspection as this car.

Those accessory exhibitors who did secure space availed themselves of the opportunity to present their products in excellent and attractive settings.

The entire line of lubricants manufactured by the Joseph Dixon Crucible Co., Jersey City, N. J., were on display, including the Non-Leak Grease "No. 680," which is the latest addition to the company's big array of products.

The 1917 Rayfield carburetor, known as model "G," which has a number of im-

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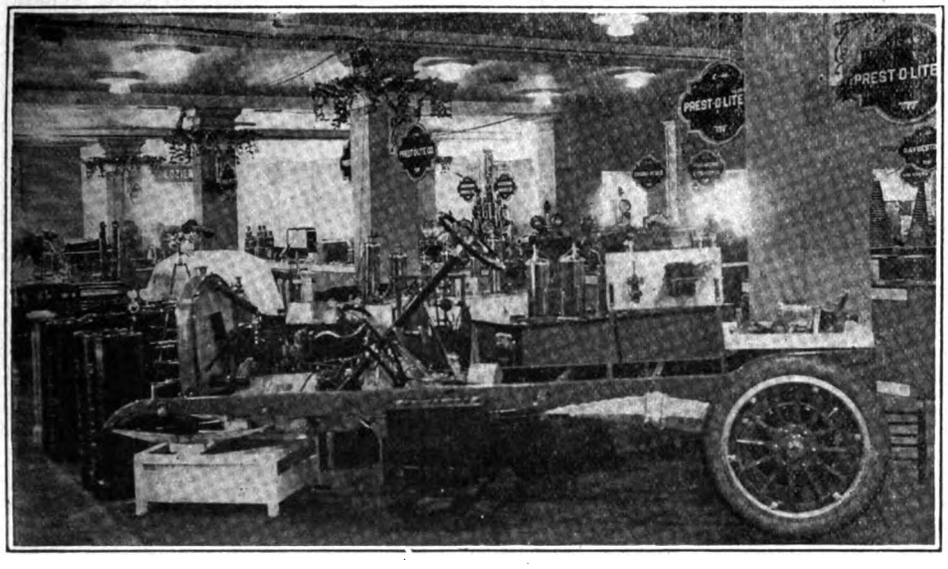
provements and refinements, was exhibited by the manufacturers, Findeisen & Kropf Mfg. Co., Chicago, Ill. On this model fuel is supplied to the carburetor through two nozzles and the suction of the motor automatically controls two air intakes and two air valves. There is also one air intake in fixed position.

The A. B. Mosler & Co., Mt. Vernon, N. Y., showed their new plug with a double hub or shoulder on the insulator. The latter exhibit attracted much attention, as the central feature was a huge Mosler plug mounted on a carriage, resembling a cannon.

The Prest-O-Lite Company exhibited the new Prest-O-Vacuum braking system at its space, together with its other products, and the attendant found himself a busy man explaining the new brake mechanism, which is operated by atmospheric pressure.

Edward V. Hartford, Inc., Jersey City, N. J., displayed a full line of the Hartford products, including shock absorbers, jacks and bump absorbers. The latter product was demonstrated in a novel

Dixon Contrived a Striking Exhibit Out of Cans of Joseph Dixon Co. Lubricants.



Prest-O-Lite Exhibition of the New Prest- O-Vacuum Braking System.

and realistic manner, the device being fitted to a miniature car which ran against obstructions to demonstrate its bump absorbing qualities.

In the accompanying illustrations are views of the J. H. Faw, Inc., exhibit at the New York show, the larger one showing the whole display, which included Faw's complete line of 15 standard automobile specialties, representing some of the most prominent manufacturers in the industry, among whom are the Culver-Stearns Mfg. Co., Fitzgerald Mfg. Co., Walden-Worcester, Inc. (formerly Walden Mfg. Co.), Ideal Clamp Mfg. Co., Oakes & Son and the Independent Lamp and Wire Co.

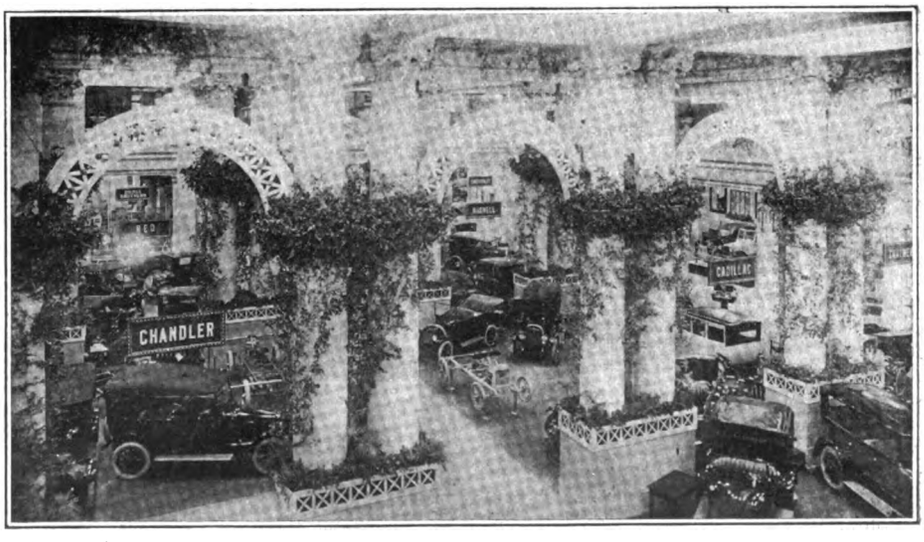
A feature was a stand upon which was an illuminated globe made up of Culver-Stearns fittings and the Independent Lamp Co.'s Tungstol lamps. The current was supplied by General Lead batteries.

The Cox Brass Mfg. Co., Albany, N. Y., exhibited the Mason Thermo Heater and the bumpers which are designed to fit popular stock cars.

The Boyce Moto-Meter, which is now supplied with designs of car name, plates, club insignia, fraternal emblems or initial dials, was exhibited by the Moto-Meter Co., Long Island City, N. Y.

Weston garage testing instruments for testing electrical systems, air compressors and portable electric tools were shown by the Black & Decker Mfg. Co. The Brunner Mfg. Co.'s air compressors were demonstrated in the garage equipment department. In this same department was included the accessory line of A. Schrader Co., the feature of which was the new Schrader inflating valve.

Other exhibits in the accessory department that attracted considerable interest were those of the U. S. Lighting and Heating Corp., batteries; Moreau & Pratt, Victor heaters, and that of the Champion Ignition Co., a full line of the well known A. C. spark plugs. The United Engine & Mfg. Co., Hanover, Penn., displayed an automatic hose reel for air service and an oil service cart.



One Part of the Main Floor, Showing the Decorative Scheme.

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S.A.E. Holds Its Largest Meeting

One of the Most Important Sessions in Its History Brings Out Many Interesting Papers.

The principal session in connection with the S. A. E. activities during show week in New York was held in the Engineering Societies building on Jan. 11.

A discussion was held on the subject of changing the name of the organization to "The Society of Automotive Engineers." Officers were elected, committees reported and six technical papers were read. The attendance was the largest in the history of the organization.

The session was presided over by Russell Huff, who reviewed the activities of the society during the past year and outlined the wider field that would be occupied by the Society of Automotive Engineers, which included engineering talent in every manufacturing industry where the internal combustion engine furnishes the power for the product.

The membership is now 2121, as compared with 1783 on Jan. 1, 1916. There was little opposition to the standard reports that were presented except that of the committee on tires and rims, strong opposition developing against the first section, which was looked upon as too liberal in the size requirements specified.

Capt. D. E. Clark, chief aeronautic engineer of the U. S. Army, presented a paper on aeroplanes which was prepared by himself in collaboration with Capt. T. F. Dodd and O. E. Strahlman. It was considered one of the most interesting of those presented, as lantern slides and moving pictures showing aeroplane activities in Europe and on the Mexican border were shown.

The most important subject taken up was that of tractor engines. H. L. Horning, engineer of the Waukesha Motor Co., delivered an address in which he described the relation of the internal combustion engine to the development of the tractor and the immense importance of the latter to the company's economic welfare.

He prefaced his remarks with the statement that the tractor would prove the biggest aid in the art of agriculture of anything that had yet been developed or discovered, and that it would be a big factor in cutting down the high cost of living.

F. Hymans of the Otis Elevator Co. read a paper on the Akimoff balancing machine, prepared by himself, and Prof. W. T. Fishleigh's paper on "Heat Balance Tests of Automobile Engines" closed the meeting, the other papers being taken by title. These latter papers were: "Remarks on Dynamics of the Automobile," by N. W. Akimoff, and "Some Essential Features of High Speed Engines," by A. F. Milbrath.

With the advent of the new Society of Automotive Engineers new fields of endeavor are opened and the scope of the big organization has been extended to cover responsibilities that rest on the shoulders of a new board of officers which took up their labors under the presidency of George W. Dunham, the newly elected head of the society. Jesse G. Vincent, vice president of the Packard Motor Car Co., is the first vice president; Charles M. Manly, second vice president; Herbert Chase, assistant manager and treasurer. The new members of the council are: H. L. Horning, engineer of the Waukesha Motor Co.; C. W. McKinley, engineer of the Willys-Overland Co.; C. W. Moskovics, commercial manager of the Nordyke-Marmon Co.

Annual Meeting N. Y. Trade Assn.

New York Dealers in Annual Conclave Choose Officers and Directors for the Year.

The Automobile Trade Association of New York State held its annual meeting during the week of the New York show. Directors and officers were elected for the ensuing year and a discussion was held on the work of the organization and plans made to continue the legislative activities.

The following were elected directors for the coming year: E. M. Alling, Rochester: R. H. Johnston, New York City; E. Lascaris, New York City; H. L. Carpenter, Brooklyn; E. V. Stratton, Albany; E. G. Oliver, Buffalo; George H. Norris, Syracuse; H. E. Listman, Troy. The individual directors represent the dealers' association in their respective cities.

Officers were elected as follows: E. M. Alling, president; E. V. Stratton, vice president; E. G. Oliver, treasurer; Charles A. Stewart, secretary and general manager. A resolution of thanks was extended to R. H. Johnston, the retiring president, who served in that capacity for three successive years.

1917 EDITION OF MOTORIST'S RECORD ISSUED.

The manufacturer of Walden-Worcester wrenches, the Walden-Worcester, Inc., formerly known as the Walden Mfg. Co., announces the publication of the 1917 edition of its Motorist's Record, which earned such wide favor among car owners last year. The booklets are of handy vest pocket size and provide means of keeping a complete record of the cost of operating a gasoline car, as well as other valuable data. There are divisions for recording the cost of gasoline, oils and tires bought and used, with subdivisions showing when, of whom and in what quantities each article was bought, and also means for quickly determining the average cost of each. Dealers and garage men can obtain large quantities for distribution among their patrons and without charge.

Dearborn Motor Truck Reformed

Company Has Been Reorganized in Illinois with $550,000 Capitalization.

The Dearborn Motor Truck Co., Chicago, Ill., has been reorganized with a capital of $550,000 as the Dearborn Truck Co., which has been incorporated under the laws of Illinois.

W. J. Kendrick, who founded the old company, is president of the new concern. S. D. Porter, who was formerly vice president and general sales manager of the Smith Form-A-Truck Co., has purchased an extensive interest in the new company and will be vice president, treasurer and general manager. Mr. Porter has been connected with the McCormick Harvesting Machine Co., the International Harvester Co. and the Maxwell-Briscoe Co.

Mr. Porter has appointed C. E. Stuart as sales manager of the company. The latter was formerly assistant general sales manager of the Smith Form-A-Truck Co. W. G. Farnsworth, who was general auditor of the old company, retains his position.

The product of the company, the Dearborn Truck Unit, for converting Ford cars into one-ton trucks, has several exclusive and patented features. The plant is located at 1250-64 South Campbell avenue, Chicago, on the B. & O. Chicago terminal. With present facilities the production is about 25 units a day, but additional machinery and equipment is being installed to double the output. The company is said to be in a very favorable position as to its stocks of materials.

ASBESTOS BRAKE LINING MANUFACTURERS' ASSOCIATION.

The Asbestos Brake Lining Manufacturers' Association, of which A. H. Burdick of the Standard Woven Fabric Co., Walpole, Mass., is president and C. J. Stover of the Keasbey & Mattison Co., Ambler, Penn., is secretary and treasurer, was formed to render service to automobile and accessory builders and distributors, jobbers and retail dealers in brake linings and to co-operate in every possible way in improving trade conditions generally.

E. V. Stratton, the newly elected president of the Albany Automobile Dealers' Association, which is composed of 20 different dealers, states that the gross business of the companies affiliated with the association amounted to $7,000,000 during the past year. He also predicts that next year the business will reach the $10,000,000 mark.

The other new officers of the association are Horace Rayno, vice president; J. B. Wood, secretary and treasurer; W. J. Sutherland, W. S. Foskett, J. S. Kingsbury, William R. Cox, J. B. Wood, Horace Rayno and E. V. Stratton, directors.

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Foreign Markets for U. S. Cars

Chief of Foreign Commerce Bureau Tells Why Car Makers Should Seek Foreign Trade.

Dr. Edward Ewing Pratt, chief of the Bureau of Foreign and Domestic Commerce, Department of Commerce, in an address before the Automobile Export Managers of the National Automobile Chamber of Commerce in New York, declared that it was remarkable that the salesmen in charge of the great automobile industry have not realized more thoroughly the possibilities of developing an export market for American cars.

"There are some very good reasons why automobile manufacturers should be interested in foreign trade," Dr. Pratt urged. "The first, and perhaps the most important reason is that the foreign market in itself is a very large market. In the last normal year before the outbreak of the war, France exported a little over $45,000,000 worth of automobiles; Germany exported about $20,000,000; Great Britain about $15,000,000, and Italy about $5,000,000. In the same year, 1913, we exported $27,000,000 worth.

"In the second place, automobile manufacturers should be interested in building up an export trade because the consumption of automobiles in the United States may be reaching the saturation point in this country. This market can and will undoubtedly consume a vastly larger volume of cars, but if the production continues to increase at the present rate, and unless very vital changes can be effected either in the consuming public or in the price of the product, the increase in the consumption of automobiles cannot indefinitely go on. This point of saturation may be a year off—may be two years—may be 10 years off. But if such a point is a possibility the manufacturer must clearly realize that if he has established a firm export business that he will not be as much affected and will be able to more easily increase his business than the manufacturer who has entirely neglected the export trade. Of course I recognize that the manufacturers of pleasure cars and commercial vehicles are differently affected by these conditions, and that while the pleasure car may have more or less completely supplied the market, the commercial vehicle has probably only begun its development.

"In the third place," continued Dr. Pratt, "export trade will tend to stabilize business conditions in the United States. In many lines of industry the prosperity of the business is dependent upon factors entirely outside its control. A short crop or a bumper crop may entirely determine the output of an industry. This is, to a certain extent, true of the automobile industry. If, however, the manufacturer has a business which covers the entire world, a poor crop or bad business conditions in one country will be offset by good conditions and prosperous times in another country.

"In the fourth place, a well developed export trade will, to some extent, do away with seasons in the manufacturing end of business. This is an obvious fact that is well known to manufacturers who have been doing business in both the northern and southern hemispheres.

"And finally, there is in the export trade, and those automobile manufacturers who have gone in for it have not been slow to utilize this advantage—a certain advertising value in this country. There is no question but that there is a considerable advertising value to the mere statement that a car has won the respect of foreign purchasers."

Rubber Capital of the World

Recent Census Shows Akron to Be the Biggest Rubber Centre in the World.

More than four-fifths of the taxable value of the industries in Akron, O., and Summit County, O., or $36,220,580, is assessed against the big rubber companies of which the B. F. Goodrich Company pays a tax on $20,392,830, or nearly one-half of the total assessed value of $43,896,440. There are other large industries in Akron, such as the Diamond Match and Quaker Oats Company, but the rubber industry is paramount and has given the city the name of the "Rubber Capital of the World."

Of the total valuation of all the Akron and Summit county industries the rubber companies are assessed as follows:

B. F. Goodrich Company.....	$20,392,830
Goodyear Tire and Rubber..	7,631,780
Firestone Tire and Rubber..	4,964,980
Kelly-Springfield Tire.....	1,371,930
Miller Rubber Company.....	1,121,910
Portage Rubber Company....	331,880
Swinehart Rubber Company..	459,270

Forty-seven years ago Dr. B. F. Goodrich established a small factory at Akron for the manufacture of rubber goods. From that beginning the Goodrich company grew to its present proportions.

ARTHUR P. TEELE HEADS BAY STATE AUTO ASSN.

At the annual meeting of the Bay State Automobile Association, Arthur P. Teele, a well known Boston attorney, was elected president to succeed George W. McNear. Mr. McNear was not a candidate for re-election, as he is now head of the Massachusetts State Automobile Association.

The other officers elected are: Fred T. Moore, first vice president; Fred K. Swett, second vice president; Dr. Herbert D. Boyd, third vice president; Walter O. Durell, treasurer; Edward J. Sears, secretary; Edward Becker, George W. McNear, James T. Sullivan, William E. Hartwell, William F. Davis, Walter R. Bliss, Walter H. Williams, Dr. A. H. McIntosh and J. F. Brown, governors.

Hyatt Investigates Retail Selling

Sales Manager Koether Gathers Some Valuable Information About Selling Motors Cars.

B. G. Koether, general sales manager of the Hyatt Roller Bearing Co., Detroit, Mich., has gathered some interesting data about retail selling policies from an investigation made among 50 of the most successful motor car dealers in the United States.

"It was our intention," says Mr. Koether, "to learn whether parts and accessory advertising in general, and our own in particular, was used by dealers, to what extent it was utilized, whether it was considered of value, and whether or not it was really a good thing for dealers and their men. Thus we hoped to gauge its effectiveness.

"Among these 50 dealers we found that 38 of them used various parts of the motor car as selling points in making sales. A further investigation showed that of this number, 35 mentioned only those parts which were nationally advertised. Eighteen of them actually insisted that each salesman know every nationally advertised part or accessory, so that he could be depended upon not to omit a single thing which might give the prospect a further incentive to buy the car.

"The full 50 encouraged the reading of parts makers' advertising, and 31 insisted on it. Forty-six were glad to make use of any literature prepared for the purpose of helping them sell cars through educational advertising on the merit of certain parts. The other four were willing to do this to a limited extent, but worked on the sales plan of selling the car as a whole rather than by detailing its features. At the same time they encouraged their men in acquiring a thorough understanding of parts through such advertising in order to satisfactorily answer whatever inquiries might be made.

"All of the 50 firms of whom these inquiries were made are noted for their success in the business. Their attitude on the advertising of parts and accessories which entered into their cars' construction, and their use of the selling value thus created, as policies which influenced their success, are worthy of adoption by all wide-awake dealers.

"Many dealers would be surprised to learn of the help they can secure from firms that manufacture some of the car's important parts. The Hyatt Roller Bearing Company has made a particular study of such co-operation, as it is upon the dealers' success that our own business welfare is based, and we have created special facilities, aside from our regular advertising resources, for making our co-operation of real value."

The Hyatt company stands ready to divulge in detail many other facts that dealers and repair men will find valuable in their work. A postal card request brings prompt reply.

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Selling and Salesmanship

By T. E. JARRARD,

Vice President, Apperson Bros. Auto Co.

IN ORDER that we may attempt to discover some helpful suggestion for the dealer who wants to make more out of his opportunities in the future than he is at present, let us review briefly some of the requisites of the successful automobile dealer and point out some essentials of dealer organization.

After all the preliminary and basic requirements necessary for a man to become a motor car dealer have been met, such as desire, financial ability, and so on, there are certain other considerations which next should be heeded.

Selecting the Product.

Perhaps the first of these is the selection of a product. Almost any dealer in any community will have many chances to become the representative of numerous automobile factories. The question of making a wise selection is often extremely difficult to decide, and is at the same time vital to the dealers' success. A line should be selected which is built and merchandised by a company of sound business integrity and undeniable reputation.

If possible the car should be well known and backed by a strong national advertising campaign. The company should be one whose reputation would not permit their putting out a car that is not worth the money asked for it. The car should be one which has won fame for itself by reason of quality and endurance tests made consistently under every day conditions.

When the selection is made and the dealer has chosen to cast his lot, the next thing to do is get acquainted with his proposition. Learn every detail of the car so a prospect cannot ask a single question that you will not be able to answer promptly. Know every minute detail from radiator to tail light, and have this knowledge so well organized and mastered that you can answer any question any time. Bear in mind that the average motor car purchaser today is one who has driven automobiles for some time, and because of his knowledge of motor cars is very liable to ask you some questions which will have you guessing unless you know it thoroughly.

The Proper Location.

When that knowledge has been mastered the dealer is ready to look for a location in which to care for the business he is shortly to create. It is obvious that this location must be picked in the logical part of the community for a motor car dealer's place of business. Carefully selected and placed show rooms often have much to do with future success.

Attractive show rooms with large plate glass windows facing the street are an asset which cannot be reckoned in dollars. Induce people to look into your show room—there is nothing like much plate glass for this purpose. Show rooms should be attractively appointed and maintained in a neat and tidy fashion so that those who look in at the window will always witness an attractive display. The car should be placed in a carefully selected and prominent position, which will show to advantage every possible selling point.

Map out your sales and advertising campaign. Give the most deliberate consideration to this, for upon it practically depend your chances for success.

Price cutting should have no place in your plans—the evils of this practise are known to everyone.

Give attention to a plan of keeping used cars from collecting in your garage. They represent tied up capital and should be turned into money immediately they are acquired. Do not start into the work in a haphazard sort of way.

Begin on a definitely worked out plan. Do not make the mistake of feeling that a sales campaign is sufficient in itself to win success. The sales campaign of every automobile dealer should be backed and assisted by an advertising campaign in the local newspapers. The local campaign works in conjunction with the factory national campaign and tends to bring the business right up to the dealer's door.

Value of Enthusiasm.

Employ clean, intelligent salesmen, who are capable of holding a clientele. Train them in a well defined sales system, and try to give them an added incentive to good work over mere salary. Get them interested in the proposition so they will feel as if they are an essential to the success of the business and not simply hired employees. Enthusiasm makes many a sale—it is contagious.

A most important part of every dealer's campaign for business is the systematic cataloguing of prospects. Work out a complete system of finding prospects from every possible source and keep a permanent history of your connection with each one. Every prospect should become the "property" of a salesman.

Prospects should be called on periodically, thus keeping your proposition constantly before their notice. Persistence, of the right kind, is a prime requisite to successful salesmanship.

Keep a watchful eye on all the little details around your show rooms. Never permit the car or the room to become untidy, for just at that time some very particular woman, who wants to buy a car such as you are selling, may step in to see your car and get a wrong impression by reason of the untidiness visible. That impression is liable to be a lasting one. Remember that the majority of motor cars are so well known that people make up their minds to buy a car of certain manufacture without investigating very deeply into the engineering features of the car. They decide on this car or that because it has won a reputation for dependability and service, and the very name of the car is a guarantee of satisfaction.

Motor car merchandising is so highly developed and cars of recognized merit are so well known that often the deciding points of a sale hinge on very small considerations likely to be passed over by the dealer, who is interested in engineering features of his car rather than in little outside details.

Guard Your Reputation.

Be jealous of your business reputation. Be just as jealous of the reputation of the factory you represent, and go to as great an effort to safeguard it as you would to foster your own. From the first day you do business as a dealer be careful to guard both these business reputations in your community with the same pains that the factory which builds the car you are selling guards its reputation on all the motor car markets of the world.

You are the local representative of a highly organized automobile factory doing business on strict business principles. If your business conduct is not above reproach the reflection not only falls hard upon you, but unjustly upon the factory whose line you are handling. A reputation for fair dealing is one of the greatest business assets the dealer can have, and one he cannot afford to be without. It is easily earned.

As the final bid for continued success and the clinching argument in your attempt to secure new business, take care of your customers after the sale has been made. Keep your promises. This consideration is the one which has either made or broken many an automobile dealer without his knowing exactly the reason for his success or undoing.

A customer may be entirely satisfied with his car and the manner in which you treated him in making the sale, but if you do not take care of him with the utmost pains in the little troubles which are bound to come up after the car is in operation, you are breeding discontent, which works the wrong way for both yourself and the factory.

Take care of your customers in the little things so they will be boosters for both you and your car. A customer will always be the best paying advertisement—a small investment to secure him will yield big returns.

ADVERTISE STANDARD ACCESSORY PRICES.

The automobile section of the Des Moines Chamber of Commerce, Des Moines, Ia., will spend $4000 in an advertising campaign in the leading papers of that state, in the interest of standard prices for automobile accessories. The campaign will be started immediately. The object is to educate the buyers to the fact that the cut price idea is a poor one in the long run, as it results in both the reduction of the quality of the article and also induces poor service.

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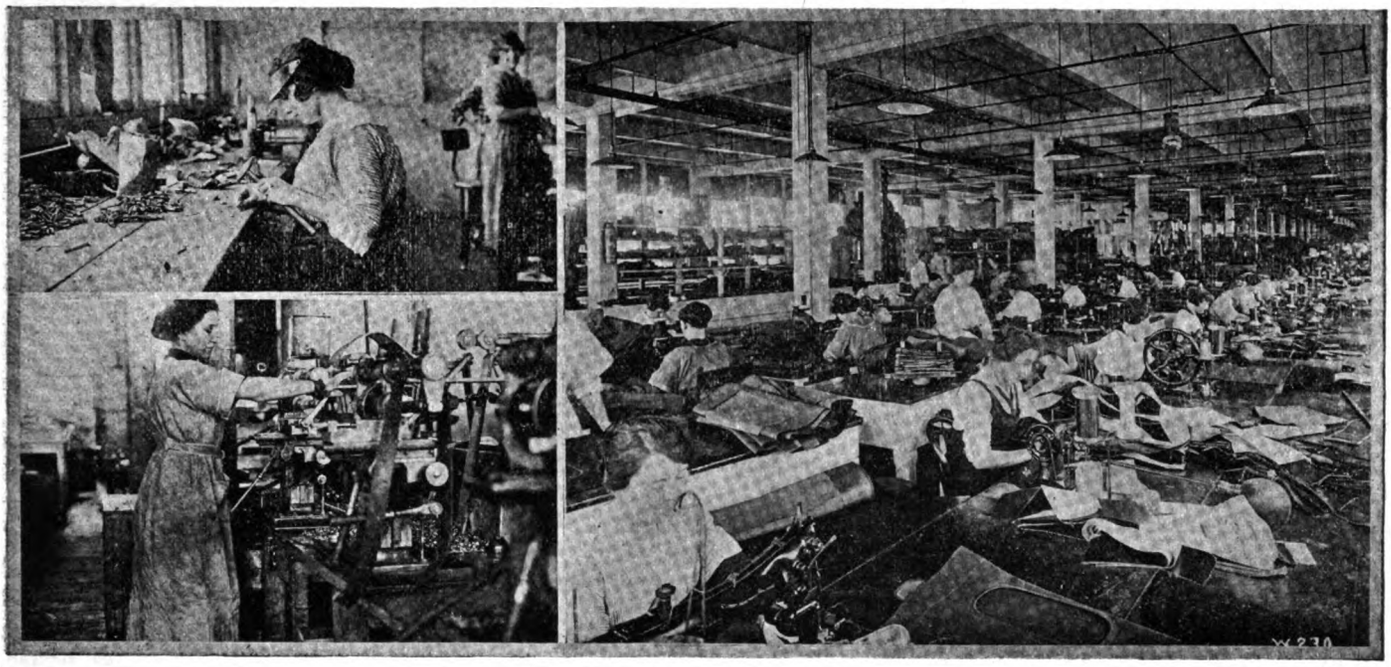

Thousands of Women Are Employed in Making Motor Cars, Mostly in Inspecting Work, Assembling Small Parts and Sewing Side Curtains and Tops, While a Few Operate Heavy Machinery, as Shown in These Views Taken in the Chalmers Motor Co. Plant in Detroit. Employers Are Strongly in Favor of Women Employees.

HAPPENINGS AMONG THE CAR AND PARTS MAKERS.

What Several of the Leading Manufacturers in the Motor Vehicle Industry and Allied Lines Are Doing or Have Under Consideration.

The Seiss Mfg. Co., Toledo, O., maker of the Seiss automobile, motorcycle and bicycle horns, has purchased a large factory building facing on Lake Shore avenue, with floor space of 52,000 square feet. This expansion is about triple the size of the present Seiss building. The structure is being entirely remodeled with steel sash, fire sprinkler system and equipped throughout with the newest machinery for the company's manufacturing needs. The new factory site is connected with the main line of the New York Central railroad, with side track of 400 feet.

The Mackie Motors Co., Des Moines, Ia., recently incorporated for $50,000, has been appointed distributor for Chalmers cars in Iowa. J. H. W. Mackie, formerly district representative of the Chalmers company, and recently manager of the Iowa branch of the Chalmers Motor Sales Co., is president. A modern sales room and garage is to be erected in the business section, with over 22,000 square feet of floor space.

The General Lead Batteries Co., Newark, N. J., has established a parts manufacturing department for making practically all capacities and dimensions of parts suitable for renewals in nearly all classifications of batteries. The object of this department is to supply all those who repair storage batteries with the highest grade of parts at fair prices.

The Walden Mfg. Co., Worcester, Mass., has changed the name of the concern to Walden-Worcester, Inc. This is a change in name only and is made to more closely identify the company with its product, Walden-Worcester wrenches.

The Bosch Magneto Co., New York, N. Y., have signed six contracts with very prominent concerns in the automobile and motor truck fields to use Bosch magnetos for the coming season. They are the United States Motor Truck Co., Cincinnati, O.; W. W. Shaw Livery Co., Chicago, Ill.; Harroun Motor Corp., Wayne, Mich.; O. Armleder Co., Cincinnati, O.; Baker R. & L. Co., Cleveland, O., and Krebs Commercial Car Co., Clyde, O.

Pierce-Arrow Has Several Traveling Stores That Circulate Throughout the Huge Plant, Selling Tobacco, Candy, Etc., to Employees During Working Hours and at Low Prices.

The Chandler Motor Car Co., Cleveland, O., has increased the wages of its employees 10 per cent. besides giving a very liberal bonus in addition. The company will pay on July 20, 1917, to the men employed on an hourly wage basis who are on the company's pay roll July 1, 1917, a 10 per cent. bonus on the entire wages paid to them by the company during the year July 1, 1916, to June 30, 1917. To employees who have been with the Chandler company the full year this bonus means about five weeks' extra pay.

The P. J. Durham Co., 244-250 West 49th street, New York, have opened a branch at 235 Central avenue, Newark, N. J., as New Jersey headquarters for the distribution of Gray & Davis products, including electric starters for Ford cars. This company is also the official service station for the Electric Auto-Lite Co. and will maintain a fully equipped shop to take care of the repair and installation of electric starting and lighting systems.

The Parker Rust Proof Co., Detroit, Mich., has received 10,000 rims to be treated with its process, from the Firestone Tire and Rubber Co., and will deliver these rims to the Hupp Motor Car Corp.

The Lewis Spring and Axle Co., Chelsea, Mich., gave their employees life insurance policies totaling more than $250,000 for Christmas presents. The premiums on the policies will be paid by

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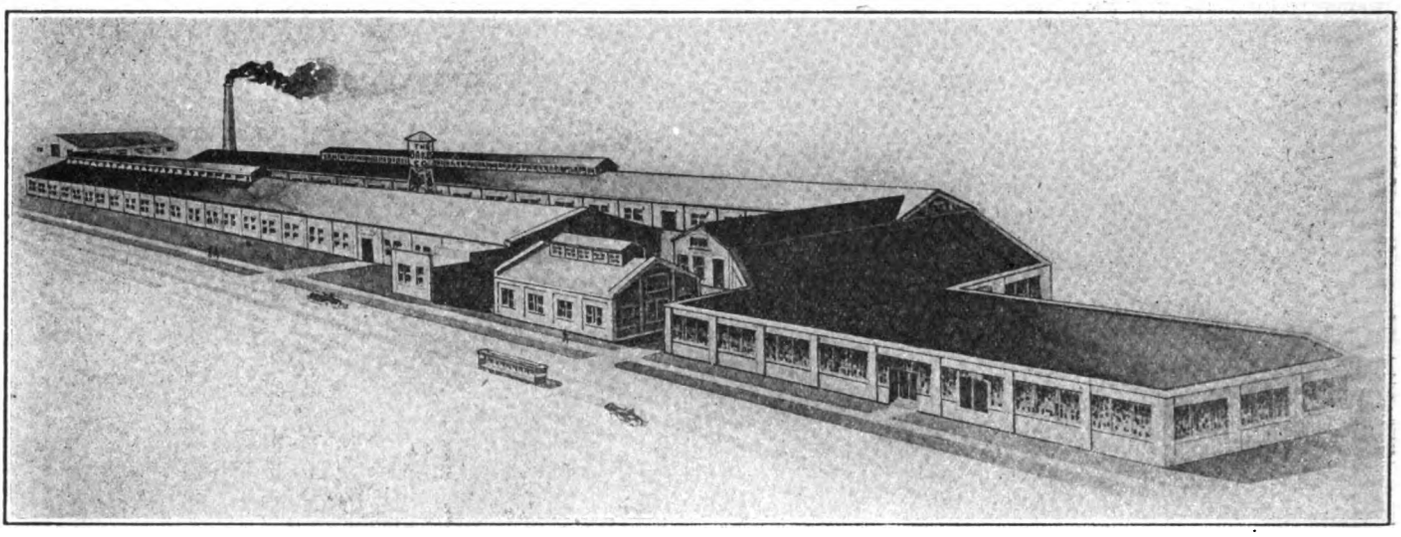

During 1916 the Plant of the Oakes Co., Indianapolis, Ind., Was Doubled in Capacity by New Additions, to Meet the Greatly Increased Demand for Oakes Products (Fans, Horns, Crank Locks and Metal Stampings). The View Above Shows the Plant at the Beginning of 1917.

the company as long as the men are in its employ. Those workers with a service record of more than six months received $1000 policies and those under six months received $500, which will automatically increase to $1000 after the men have been with the company six months more.

The Willys-Overland Co., Toledo, O., reports 1916 as the biggest year in its history. The company sold 150,000 Overland and Willys-Knight cars, a net gain of better than 40 per cent. over 1915. The net assets are more than $68,000,000.

The Knox Motor Associates, Springfield, Mass., has developed a unit that may be used with a touring car and for a tractor capable of hauling two to three tons. This unit sells for $550 and is composed of an internal gear drive rear axle, the trailer platform and necessary connections, and takes the place of the rear axle and tonneau of the touring car.

The Moreland Motor Truck Co., Los Angeles, Cal., will give a bonus of 10 per cent. of their salaries to all workers who have been with the company for six months and will later give the same bonus to those whose services are under the six months' period when they have completed that length of service.

The Forscier Motor Truck Mfg. Co., New Orleans, La., has increased its capital stock to $50,000. The company intends to build a factory.

The Empire Rubber and Tire Co., Trenton, N. J., has been reorganized with a capital of $4,500,000, of which $1,500,000 is in preferred stock and $3,000,000 common. J. E. Baum, a director of the Corn Exchange Bank of New York City, and president of the Supplee-Biddle Hardware Co., Philadelphia, Penn., heads the new company. C. Edward Murray of Trenton, N. J., former head of the company, retains a large interest in it and is a member of the board of directors. C. Edward Murray, Jr., is vice president and J. Cornell Murray is treasurer.

The Thermoid Rubber Co., Trenton, N. J., has issued a new catalogue and price list of its various automobile products, including brake linings, brake and clutch blocks, clutch facings, rings, air and gasoline tubing, fan belts, spring bumpers, pedal pads, tires, tube reliners and flexible coupling fabric. The various products are illustrated and described in detail. The company also makes all kinds of rubber products to meet special requirements.

The Le Roi Co., Milwaukee, Wis., has been organized with $350,000 capital stock to take over the Milwaukee Machine Tool Co. Charles W. Pendock is president, J. Roy Frantz is vice president and Norman Christiansen is secretary and treasurer. In addition to the four-cylinder Le Roi engine a six-cylinder type will be manufactured for pleasure cars.

Fabbrica Italiano Automobili Torino, Turin, Italy, better known as manufacturer of the F. I. A. T. car, is negotiating for the purchase of the F. I. A. T. of Poughkeepsie, N. Y., which concern manufactures the car in this country.

The Wagner Electric Co., St. Louis, Mo., maker of electric starters, will increase its capital stock from $2,000,000 to $5,000,000.

The Allen Motor Co., Fostoria, O., has secured a 500-acre tract which will be used as a site for a large plant. Over 1000 men will be employed and all parts of the car will be manufactured in the plant. It is also understood that other factories are to join the Allen company.

The Seneca Motor Car Co., Fostoria, O., which was recently organized, will manufacture a four-cylinder, five-passenger touring car and a three-passenger roadster. The touring model will sell for $735. The chassis, which will have a wheelbase of 118 inches, is to be equipped with an L head Le Roi engine, in unit with a disc clutch and a three-speed gearset. The engine is fitted with Zenith carburetor, Remy distributor, Allis-Chalmers starting and lighting system, with Willard storage battery. The thermo syphon system of cooling is employed.

The Crow-Elkhart Motor Co., Elkhart, Ind., has increased the production facilities at the plant and is planning on a production of 9000 cars for the current year.

The Kelly-Springfield Tire Co., has been awarded $376,353.50 in the United States District Court at Chicago, the money representing royalties due from the B. F. Goodrich Co., and the Republic Rubber Co., for manufacturing a product covered by the old Grant tire patent, No. 554,675, issued Feb. 18, 1896. The patent was made the basis of the suit in which violation of patent license was claimed. Interest accumulations will raise the sum to $400,000. A similar case brought by the Kelly-Springfield company against the Diamond Tire Co. is now pending.

The Corbitt Automobile Co., Henderson, N. C., which has been manufacturing motor trucks for the past four years, has been sold to the Corbitt Motor Truck Co., which was formed with a capital of $1,000,000 for the purpose of taking over the old company.

The Clark Mfg. Co. has been organized at Buchanan, Mich., for the purpose of taking over and consolidating the Buchanan Electric Steel Co. of that city and the Celfor Tool Co. The authorized capital of the new company is $5,000,000, divided into $2,000,000 common stock and $3,000,000 preferred.

The S. F. Bowser Co., Detroit, Mich., recently distributed a bonus among the employees whose annual salaries were under $2000, each receiving a sum equal to 12½ per cent. of his total wages during 1916. The concern's business during the past year totaled over $6,000,000. Plans are being made for new buildings and increased production facilities.

The Hamilton Motors Co., Grand Haven, Mich., has been incorporated with an authorized capital of $500,000.

The Prest-O-Lite Co., Indianapolis, Ind., will increase its capital stock from 80,000 to 100,000 shares. The shares have no par value.

The Pyrene Mfg. Co., New York City, has increased its authorized capitalization to $3,050,000, of which $50,000 is preferred stock. The stockholders will be offered 50,000 shares of the common stock for subscription at par ($10).

The Cutler-Hammer Mfg. Co., Milwaukee, Wis., gave a Christmas present and a bonus of 10 per cent. of the yearly

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wages to all the 2400 employees of the company.

The Aluminum Goods Mfg. Co., Manitowoc, Wis., is considering plans for the establishment of a complete aluminum rolling mill unit in connection with its main works and foundry at Manitowoc. The company also operates at Two Rivers, Wis., and Newark, N. J.

The M. & S. Corp., Detroit, Mich., has installed its new plant for the manufacture of differentials and will increase its equipment to give a capacity of 400 differentials per day.

The Standard Wheel Co., Terre Haute, Ind., is constructing a foundry which will be used for the manufacture of malleable iron castings for wheels and automobile hubs.

The Marion Truck Corp., Marion, Ind., has incorporated with a capitalization of $1,000,000. The directors are C. G. Barley, J. W. Stephenson, S. W. Winder and G. C. Harwood.

The J. W. Leavitt Co., San Francisco, Cal., former Overland dealers, have closed with the Premier Motor Corp., and will handle the Aluminum Six. J. W. Leavitt is president and A. D. Plughoff is vice president and general manager. A new building is being erected at Vanness and California streets. When completed there will be 45,000 square feet of floor space.

The Yankee Auto Specialty Co., Detroit, Mich., has been incorporated at $50,000 to manufacture automobiles and parts. The principal stockholders are George W. Bolton, William S. Bolton and Melbourne Walker.

The Asbestos Brake Lining Manufacturers' Association, Ambler, Penn., is an association formed to render real service to automobile and accessory builders, distributors, jobbers and retail dealers in brake lining and in every possible way to co-operate with anyone interested in the movement of trade. A. H. Burdick of the Standard Woven Fabric Co., Walpole, Mass., is president, and C. J. Stover, secretary and treasurer.

The Scanlon Auto Supply Co., Rochester, N. Y., has been given the territory consisting of the city of Rochester and five surrounding counties, by the Amazon Tire and Rubber Co., Akron, for the exclusive distributing of Amazon anti-blowout tires.

The Progressive Metal and Refining Co., Milwaukee, Wis., maker of aluminum ingots and alloys, has broken ground for the first unit of a new plant with about 55,000 square feet of floor space. The initial construction will be a building three stories high and 40 by 160 feet in size. The second unit will be 80 by 160 feet and three stories and basement.

The Southern Motor Car Co., Memphis, Tenn., is erecting a building to contain an octagon-shaped show room for cars and a garage. The total cost will be $17,000. The company sells Mitchell cars.

The Fisher Body Corp. is erecting a five-story structure, 324 feet long and 235 feet deep, of the flat slab mushroom system reinforced with an extra surface of maple. The building will be ready for occupancy May 1.

The Dearborn Motor Truck Co. has been organized as the Dearborn Truck Company and has increased its capitalization to $550,000, of which $200,000 is to be preferred stock. S. D. Porter is vice president, treasurer and general manager. The company manufactures the Dearborn truck unit for converting Ford cars into one-ton trucks.

The Carter-Long Magneto Co., Waukegan, Ill., has increased its capital stock from $50,000 to $75,000. The company is now planning to supplement its magneto output with a commutator, coil and distributor, enabling it to offer a complete magneto and battery system.

The Brock Bearing Co., Toledo, O., will secure enough space to quadruple its production. The output is increasing and the company is very much cramped for production facilities.

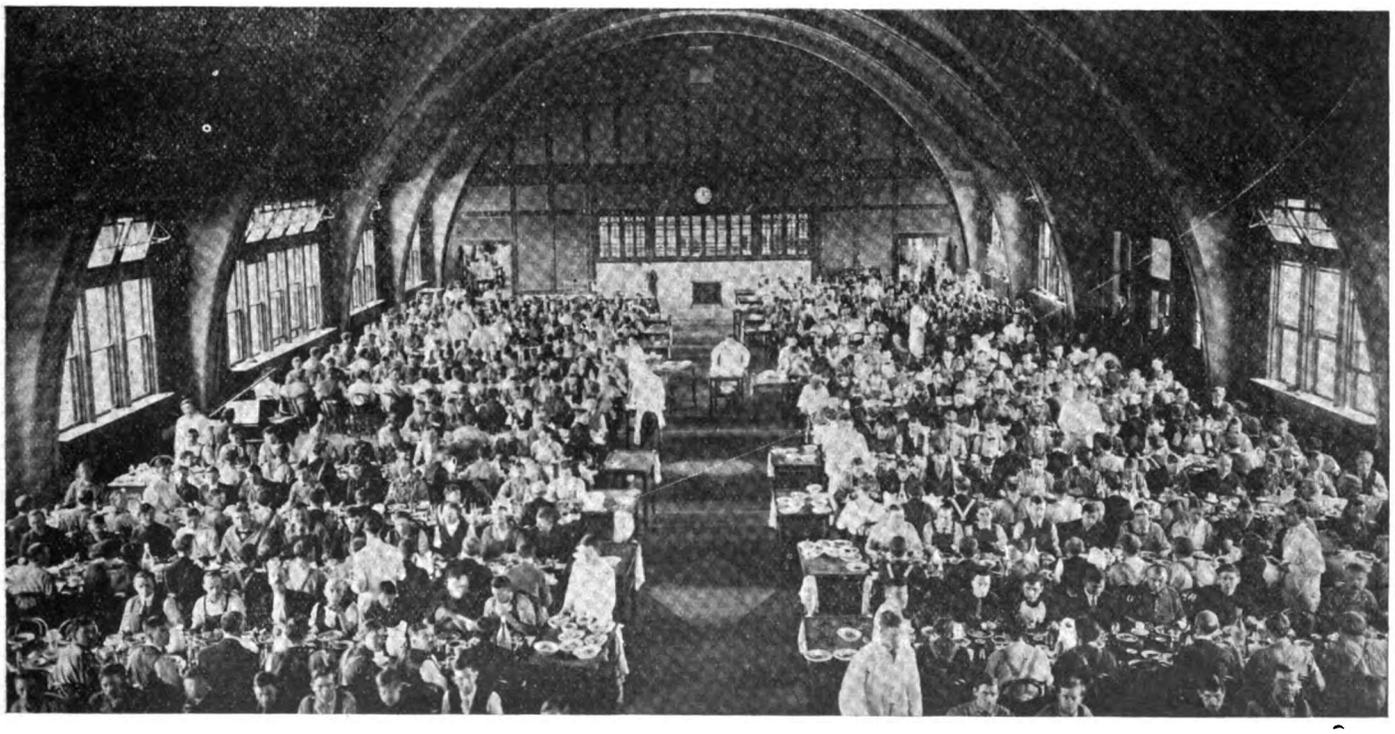
The National Rubber Co., Pottstown, Penn., is placing on the market a new gray tread speedway tire which will be guaranteed on a basis of 5000 miles. The list price of the new tire will be a little higher than the ebony tread speedway tire.

The Universal Valveless Cycle Motor Co., Toledo, O., which builds engines, has taken a lease on a 40-acre site in Muskegon, Mich., and will start building a factory. The company expects to get into new quarters next fall.

The Bailey Non-Stall Differential Corp., of Chicago, Ill., has taken over the patents and manufacturing facilities of the Gearless Differential Co., Detroit. The company is planning an extensive sales and advertising campaign. The officers are R. D. Small, president; George D. Bailey, vice president; M. H. Needham, general manager and treasurer; C. F. Ferguson, secretary.

The Akron Biltwell Tire and Rubber Co., Akron, O., has been organized with a capitalization of $200,000 for the purpose of manufacturing tires and accessories. The incorporators are M. Braley, J. F. Risch, W. H. Kline, W. A. Young. A new factory building will be erected in the eastern part of the city, the main building to be 60 by 150 feet, two stories in height and of brick construction.

The Cook Railway Signal Co., 220 Century building, Denver, Col., has been reorganized as the International Electric and Signal Co., with offices at 6 North Michigan avenue, Chicago, Ill.



How Pierce-Arrow Provides Dinner for 900 Employees at One Time in the Huge Factory Dining Room at 15 Cents Each Meal. There Are 39 Tables, Each Seating 25 Men, and There Is One Waiter to Each Table. In the Open Market the Meal Would Cost About 35 Cents.

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Don't Take a Married Woman's Promise to Pay a Customer's Debt.

By ELTON J. BUCKLEY.

BEFORE you accept a married woman as security for somebody else's debt, be sure that she isn't going further than the law allows her to go, so that she can say, when you sue her, that her promise was void. A great many business people have been deceived in that way, and have found when it was too late, that their security amounted to nothing.

The married women's property acts, which have been passed in practically all states, have very greatly enlarged the capacity of a married woman to make contracts, hold property and dispose of it. That has naturally resulted in a much larger number of women engaging in business or participating in business transactions, and in holding property in their own name. It is more or less common for a married woman to go security for somebody, and usually, if it is clear that the woman holds enough property to make her obligation good, her security is eagerly accepted. Sometimes it turns out absolutely worthless, if she is the sort of woman to try and escape it afterward if called upon to make good.

ARE you in need of legal advice? Do you want first class professional service at no cost to yourself? If so, address a letter to Mr. Buckley, in care of the Legal Department of the Accessory and Garage Journal, detailing your troubles as clearly as possible. He will give immediate answer, either on this page, for the benefit of other subscribers who may have the same trouble, or direct by mail, as the inquirer specifies. The writer should sign his full name and address, but only initials or a pseudonym will be published in these columns. The service is free to subscribers to this magazine.

For there is a point beyond which most married women's property acts have not gone. They have not given her the right to bind herself as surety or guarantor for the debts of a third person, even her husband. This is to protect her from imposition. If she does such a thing out of pure accommodation for somebody, deriving no benefit from it herself, she can always get out of it if she is so disposed.

A case decided by the Supreme Court of a western state only last week shows how this works in a business transaction.

A married woman owned a store building and warehouse. She rented it to a retail merchant who was short on credit. After he was in the building he discovered that he could not get along without help, and he induced her to guarantee his accounts for goods. This she did. He got the goods, did business for awhile, but even with her help he failed to make it go and finally laid down. His creditors thought themselves safe, and promptly made demand on the woman who had guaranteed their accounts. Being somewhat crafty, she refused to pay and one creditor sued her. Incidentally, this was Armour & Co., the packers, which shows how even the biggest people can be taken in along this line.

The creditor lost, the court deciding that the woman had exceeded the powers which the law had given her. She had become surety for the debt of a third person, which she could not do, and notwithstanding that various people had trusted her tenant on the strength of her promise, she could repudiate it if she wished to.

In all these cases the effort is to show that the married woman who is seeking to escape from her obligations derived some personal benefit from the credit which was extended on the strength of her promise. If that can be shown she is liable, because she is then considered as practically having gone surety for herself. This was tried in this western case, and the plaintiff produced some pretty strong evidence of it. He showed:

1—That the guarantee was really for her own benefit because it kept a tenant in her building, and

2—That it also benefited her because it helped him to do business and pay her rent.

This was pretty strong logic, but the court ruled it out, in the following language:

> It was not claimed that there was any consideration passing between the plaintiffs and the defendant (the woman) inducing her to execute the guarantees, nor that she received any of the merchandise purchased by the tenant. Being a married woman, she could bind herself only on such contracts as she was permitted by law to make. It is well settled that a married woman cannot bind herself as a surety or guarantor for the debts of her husband or for a third person, but her personal liability on contracts is restricted to contracts made for her own use and benefit, or for the use and benefit of her separate estate. The burden of proof was upon the plaintiff to show that the contract was one that the woman had the power to make, and it attempted to discharge this burden by showing that the tenant, for whom the guarantees were made, was a tenant occupying a storehouse belonging to her with a statement that she executed the guarantee in order to help him to procure a stock of goods and enable him to open the store and pay the rent he had agreed to therefor. He said the store had been vacant before he rented it, and that he would have had to move out and would not have been able to keep it and conduct business there but for the guaranty, and that he thought it was for her benefit. The storehouse, it is true, was her separate property; but it is also true that there was no testimony showing that the building could not have been rented to any one else or occupied by another tenant, who would have paid the same rent therefor, and in fact the testimony does show that it was rented to another tenant the very day that it was vacated. According to the plaintiff's statement, the first tenant did not pay rent after occupying the store and procuring the goods on the guaranty. There was no special benefit to her separate property resulting from the contract made, its usable value was in no wise enhanced nor its physical condition changed.

I suppose it is necessary for courts to go even this far in order to protect married women from imposition, but I have an idea that this retailer's creditors, who gave him goods on the strength of the woman's promise, came out of the case with an increased contempt for the law. Naturally the court had to enforce the law as it was, not as it should be. My belief is that a married woman of sound mind, memory and understanding, and not acting under coercion or undue influence, who guarantees the account of a third party, should be held to her contract. Allowing her to repudiate it after she has deceived everybody, teaches her fraud and should be considered against public policy.

So that when somebody wants to open an account, or extend one already open, and offers his wife or his mother or some other married woman as security, be exceedingly careful to know where you stand before you accept her. The only really safe plan is to make it a cash transaction and let her pay then and there.

(Copyright, January, 1917, by Elton J. Buckley.)

To "soften" files cover with oil and hold over a fire until the oil blazes. When the flame runs all over the file plunge into water. To harden files dip in red hot lead, handles up, which gives a uniform heat without warping. Run the file back and forth in a pan of salt water, then set it in a vise and straighten while still warm.

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Officers of the Motor Products Co., Detroit, Mich., from Left to Right: W. C. Randa, President; C. F. Jensen, Vice President and Director of Purchasing; H. H. Seeley, Vice President and Director of Sales; D. B. Lee, Treasurer and General Manager; M. L. Brown, Secretary; R. R. Seeley, Production Manager.

Activities of Prominent Men of the Industry

Resignations, Promotions and Other Changes in Personnel of Motor Vehicle Manufacturing and Merchandising Companies and Allied Businesses.

C. A. Bonniwell has resigned as assistant sales and advertising manager of the Auburn Automobile Co., Auburn, Ind. He is now associated with H. Walton Heegstra, Inc., Merchandising and Advertising Service of Chicago, Ill.

Richard H. Taylor has been appointed branch manager of the Zenith Carburetor Co. of Chicago, at 1507 Michigan avenue. His experience in the industry covers approximately 15 years. In 1901 he joined the White Co. at Cleveland. Mr. Taylor, in 1909, became connected with the General Motors Co., and while with this concern his ability to work out the problems of carburetion attracted the attention of the Zenith Co., and he accepted an offer to go to Detroit in 1912 as its sales engineer.

Richard H. Taylor.

Harold C. Vance has been appointed acting purchasing agent of the Studebaker Corp. to fill the place made vacant by the death of C. J. Reynolds. Mr. Vance has been connected with Studebaker for many years.

Arthur W. Robinson, formerly of Bridgeport, Conn., is now in London, England, and has been promoted from director to the position of managing director of Gaston, Williams & Wigmore, Ltd., Alexandria House, Kingsway, London. Prior to this Mr. Robinson was truck sales manager and director of the Locomobile Company of America.

Theodore L. Dodd has been appointed special sales representative of the metal stamping department of the Oakes Co., Indianapolis. Mr. Dodd was for 10 years secretary and general sales manager of McClernan & Co. of Chicago.

Owen Moynihan has been appointed eastern manager of the Amazon Tire and Rubber Co., Akron, O. Mr. Moynihan will cover the entire eastern territory, with headquarters in New York City.

Arthur N. Goding has joined the Hood Tire Co., Inc., Watertown, Mass., as a sales promotion representative. His territory includes all the New England states, where he has had the greatest measure of his experience and success and is widely acquainted in the trade. He is well known throughout New England as an advertising, selling and sales promotion representative.

I. D. Rocap has been promoted to the position of sales and service engineer for the King Motor Car Co., Detroit. He has been technical expert for the company for some time.

Ray W. Donohue has been appointed sales promotion manager of the Regal Motor Car Co., Detroit. He succeeds C. J. Landen.

R. S. Hurd, manager of the Portland, Ore., branch of the White Co., Cleveland, O., has been promoted to the position of sales manager for the Pacific Coast. He will devote his attention to enlarging the wholesale business of the company in his territory, which includes Arizona, Nevada, California, Oregon, Washington, British Columbia, Alaska, the Hawaiian Islands, the Philippines and Australia.

Ben Goldberg has joined the advertising division of the Chevrolet Motor Co., New York, N. Y. He is a graduate of Harvard and was formerly with the Brooklyn Daily Eagle.

A. R. Giffin is now with the Kellogg Mfg. Co., Rochester, N. Y., as production and general manager of the plant. He was for some years with the Studebaker Corp. and more recently with the Timken company of Detroit.

R. E. Chamberlain, truck and sales manager of the Packard Motor Car Co. of New York has taken the position of truck sales manager of the company in Detroit. Mr. Chamberlain is thoroughly familiar with truck sales activities and he is well versed in conditions which relate to the country-wide sales of Packard trucks.

Charles B. Woodworth and Desmond Woodworth, doing business under the firm name and style of the "Leather Tire Goods Co.," located on Whirlpool street, Niagara Falls, N. Y., has been dissolved and the business, property and all assets formerly belonging to the firm has been transferred to the Woodworth Mfg. Corp., a company organized to carry on the business formerly done by the firm, and will continue the business. The members of the firm of the Leather Tire Goods Co. will continue to be associated with the business.

John L. Butler, who for the last year has been in charge of the advertising department of the Pennsylvania Rubber Co., Jeannette, Penn., has been appointed advertising manager.

R. B. Johnston has joined the American Motors Corp., Plainfield, N. J. He will help the secretary, P. W. Hansl, in handling the advertising and assist the director of sales, Marcus I. Brock.

George H. Boggs at Left and Lawrence K. Earle at Right, of Earle & Boggs, Eastern Sales Agent of the Buda Co.

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Edwin A. Travis has been appointed general sales manager of the Locomobile Co. of America. He was formerly assistant sales manager and previous to that time was manager of the Locomobile branch at Boston.

Delmar G. Roos has been appointed assistant chief engineer of the Locomobile Co. of America. For several years past he has done much valuable research work for the concern.

Percy W. Hine, formerly associated with the sales department at the executive offices of the Locomobile Co. of America, has been appointed to the management of the Bridgeport branch and territory. He is also in charge of service rendered by the Bridgeport factory to Locomobile owners.

S. B. Taylor has been appointed vice president of the S. K. F. Ball Bearing Co., succeeding F. B. Kirkbride. Mr. Taylor will remain in charge of sales. G. A. Ungar, former representative of the company in Cleveland, Detroit and Pittsburg, has been appointed technical manager and chief engineer, succeeding Ono Forsberg, who has returned to Sweden.

S. Christensen has been appointed special sales representative of the Motor Products Corp., Detroit. He will call upon all the large jobbing trade in the interests of the company. For the past year Mr. Christensen has been on the Pacific Coast. Previous to that time he was for several years employed as traveling representative of the Vanguard Mfg. Co.

Don M. Dickinson is now director of sales of the Champion Motor Co., Inc., Fulton, Ill., and Cleveland, O. Mr. Dickinson's headquarters will be in the Hippodrome building, Cleveland. He has has wide selling experience, covering 20 years. He has been in both the pleasure car and truck field, having been identified in a sales capacity with the sale of Federal and Kissel trucks in Rhode Island. Mr. Dickinson enjoys the unique distinction of having operated the first jitney 'bus line in the country, in Providence, R. I.

Fred H. Ayers has been appointed sales manager of the Fisk Rubber Co., with headquarters at the company's general offices in Chicopee Falls. Mr. Ayers is one of the best known tire men in the East and has been with the Fisk company since 1906. He was made manager of the company's Boston branch in 1909 and, when five years later the sales organization was divided into districts, the branches in New England and New York state east of Buffalo came under his supervision. George T. Newton has taken Mr. Ayer's position.

Three Locomobile Men Recently Promoted—Left to Right: Edwin A. Travis, Delmar G. Roos and Percy W. Hine.

E. G. Scott, formerly with the Kissel Motor Car Co. and the Packard Motor Car Co., has joined the sales organization of the Kentucky Wagon Mfg. Co. of Louisville, Ky., manufacturers of the Old Hickory truck.

John D. Northup of the United States Geological Survey has issued a preliminary statement in which the quantity of crude petroleum produced in the United States in 1916 is estimated at 281,104,104 barrels. This is an increase of four per cent. as compared with the output in 1915.

L. E. Nutt, a director and secretary of the Velie Motor Vehicle and Engineering Co., has resigned. He has been associated with the different Velie companies for over 15 years.

Dr. Warren K. Lewis, professor of chemical engineering at the Massachusetts Institute of Technology, has been appointed consulting chemist for the Goodyear Tire and Rubber Co.

G. M. Cushman has become associated with the Metz Co., with headquarters at Columbus, S. C. He was formerly connected with the Maxwell Motor Sales Corp of Boston.

John U. Widrin is now Chalmers representative in Tacoma, Wash., with the Griffith Motor Co. He is a well known automobile salesman of the Pacific Coast.

Louis Schwitzer is now with the Oakes Co., Indianapolis, as sales engineer. He was formerly engineer for the Empire Auto Co. With the Oakes Co. he assumes complete charge of production and will work with the engineers of motor car manufacturers to assist them in every possible needs of each make of motor.

B. V. Covert, founder and president of the Covert Gear Co., Inc., Lockport, N. Y., maker of transmission gearsets, has retired from active control of the company and is succeeded by P. A. Clum, who has been treasurer. Mr. Clum has practically purchased all of the common stock held by Mr. Covert, but the latter will retain a substantial financial interest in the concern.

H. H. Scofield has been appointed director of sales for the Drexel Motor Car Corp., Chicago, Ill. He has had an extensive experience in sales and has in the past been connected with prominent corporations, among them being the Acme White Lead and Color Works, Detroit; the Studebaker Corp., General Motors Co. and Paige Detroit Motor Car Co. Mr. Scofield will have full charge of all matters pertaining to sales and supervision over advertising and service.

Otto Bruenauer, Chicago, Ill., has become associated with the U. S. Ball Bearing Mfg. Co., as engineering manager. In this capacity Mr. Bruenauer will have full charge of all engineering and development work and will supplement the work of E. B. Fleisch, sales manager, and Howard L. Spohn, commercial manager, who became associated with the U. S. Ball Bearing Mfg. Co.

H. H. Gildner has joined the F. R. Blair & Co., New York, N. Y., maker of the Flexite universal joints and couplings. He will be manager of the Flexite department. Mr. Gildner has been for the past three years chief engineer of the S. K. F. Ball Bearing Co., Hartford, Conn.

W. R. Tracy has been made assistant sales manager of the Oakland Motor Car Co., Pontiac, Mich. Mr. Tracy has been connected with the Oakland company for several years and was formerly manager of the Michigan branch.

J. G. Roe, who was formerly in the advertising department of the Hupp Motor Car Corp., has joined the organization of E. A. Nelson, Detroit.

G. C. Core, formerly advertising manager for the Sparks-Withington Co., Jackson, Mich., has joined the staff of the Springfield Body Co., Detroit, as advertising manager.

John O. Heinze has joined the Simms Magneto Co., East Orange, N. J., as engineer and production manager. He was formerly with the John O. Heinze Co., Springfield, O., maker of a starter for

Officers of the Elgin Motor Car Corp., Chicago—Left to Right: President, Frederick L. Brown, Also Prominent in Chicago Assn. of Commerce; C. S. Rieman, Vice President and General Manager; G. Vernon Beck, Sales Manager, Formerly with Chalmers and Detroiter Companies; Clarence F. Jamison, Asst. General Manager, Formerly General Sales Manager for Saxon; W. G. Knoedler, Secretary and Treasurer, and Also President of Argo State Bank; F. X. Devlin, Purchasing Agent, Formerly with Federal Motor Truck Co.

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Fords, his invention. Prior to that he was a member of the Northway Motor & Mfg. Co. as chief engineer.

Bert Dingley, who was a member of the champion baseball team supported by the Chalmers Motor Co. six years ago, has been appointed traveling representative for the Mitchell Motors Co., with headquarters at Detroit.

H. F. W. Rasmussen, who has been the wholesale representative for the Chevrolet Motor Co. in New England since that company was started, has become distributor for Inter-State cars in the same territory.

Russell Baldwin has resigned as representative of the Stewart-Warner Speedometer Corp., and will be succeded by F. H. Martin, who previously represented the company in the eastern states.

J. L. Butler, Jeannette, Penn., has been appointed advertising manager of the Pennsylvania Rubber Co. He was in charge of the advertising department.

W. A. Chapman has been made field manager of Western Texas for the Dort Motor Car Co., Flint, Mich. Mr. Chapman was formerly the sales manager for the Rock Island Implement Co. of Oklahoma.

Frank J. Ryan has been appointed general sales director of the White Star Refining Co., Detroit. He was formerly in charge of western advertising for a publishing company.

Malcolm E. Parrott has been made general manager of the three retail and wholesale car and accessory businesses of John Van Benschoten in Poughkeepsie, Newburg and Kingston, N. Y. For the past four years he has managed the Newburg branch and his headquarters will be in the office in Poughkeepsie.

C. B. Rose has been elected vice president of the Velie Motors Corp., Moline, Ill., and will have charge of purchasing and production. W. K. Kennedy will be his assistant. L. H. Hazard has been elected chief engineer of the company.

W. J. Slater, formerly manager of the sales promotion department of the Firestone Tire and Rubber Co., is now special representative of the general sales department.

Walter M. Brand has been promoted to be manager of the Maxwell branch in New Orleans, La., and J. P. Hadley, who opened the branch and has been manager, has been promoted to manager of the wholesale department of the Atlantic branch.

J. C. Moore, with Lexington-Howard.

Louis Schwitzer, with Oakes Co.

H. F. W. Rasmussen, with Inter-State.

W. I. Brown has resigned as sales manager for the Scripps-Booth Co. to join the staff of the Harroun Motors Corp. Mr. Brown will assist J. J. Path, director of merchandising. R. Ward Macey, sales manager, will become a Harroun distributor in the Middle West.

Edward F. Korbel has been elected vice president of the Roland Advertising Agency, 1790 Broadway, New York City. He will handle all motor car accounts. He has been a press agent for a number of years.

F. L. Klingensmith, Detroit, Mich., vice president of the Ford Motor Co., has retired as vice president and director of the Highland Park State Bank.

Harris F. Holland has been appointed sales manager of the motor truck division of the Myers Machine Co., Sheboygan, Wis. He succeeds L. P. Helm, who has resigned.

J. W. Barber, who has been with the Peerless motor car for eight years, has been appointed manager of retail sales in Cleveland, O.

O. L. Lennen has been elected to the directorate of the Jones Motor Car Co., Wichita, Kan.

E. C. Hoelzle is now assistant treasurer of the Parker Rust Proof Co. of America. He was formerly assistant to the general manager.

J. C. Moore, chief engineer of the Lexington-Howard Co., Connersville, Ind., is the inventor of the Moore multiple exhaust system which has been adopted in the new Lexington Minute Man Six for 1917.

E. F. Williams, special foreign representative for Dodge Brothers, Detroit, Mich., will be the representative for Manila, Australia and New Zealand.

John R. Renfroe has been appointed eastern sales agent of the Sparks-Withington Co. His headquarters will be in New York City.

James B. Fry, formerly associated with the Studebaker Corp., Detroit, Mich., is now general manager of the Becker Motor Car Co., Grand Rapids, Mich., Studebaker distributors for Western Michigan.

Percy F. Black has been appointed manager of the Cole Motor Sales Co. for Southern Georgia. His headquarters are in Valdosta, Ga. He was formerly associated with the Hobbie Motor Car Co.

Louis H. Tyler has become manager of the Citizens' Auto Co., San Antonio, Tex., distributors for the Packard and Reo lines. He was formerly in the banking and wholesale business in Dallas.

C. C. Bradford has resigned from the U. S. Light and Heat Corp., Niagara Falls, N. Y., of which he was for several years sales manager.

The Ford Motor Co., Detroit, Mich., has notified dealers in Ford cars that they will not be allowed to carry stocks of cars and that machines will only be forwarded to fill actual orders on which deposits have been made.

Charles Seiberling and L. G. Odell of the crude rubber department of the Goodyear Tire and Rubber Co. have gone to India to make a study of the rubber plantations in that country.

Group of Some of the Sales Representatives of the Garford Motor Truck Company, Who Attended the Recent Conference at the Factory at Lima, O.

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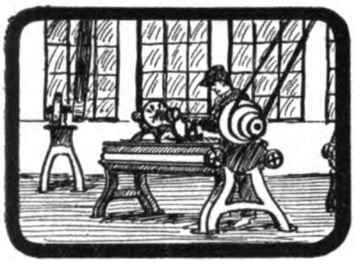
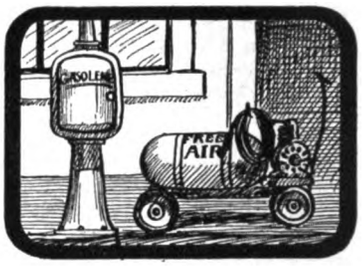


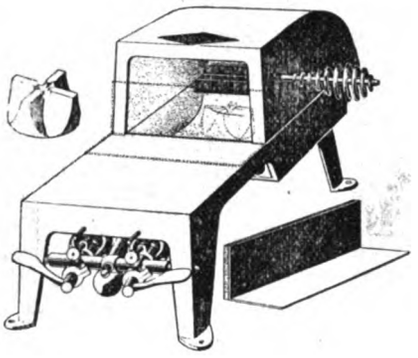
GARAGE EQUIPMENT



JOHNSON GAS BENCH FURNACE.

The Johnson gas burning bench furnace is designed for heating soldering coppers, hatchet irons, capping steels, branding stencils and for case hardening, annealing, heating for tempering, etc. It is equipped with two powerful auto blast bunsen burners, each producing approximately 2250 degrees Fahrenheit. These burners are fitted with Johnson adjustable direct jet regulators, which are instantly adjustable to any quality or pressure of gas. Supplied with the furnace is a work rest block to be placed in the combustion chamber to obtain even heat treatment and a faced baffle plate to partially close the opening, as shown in cut by dotted lines. The dimensions of the furnace, which is described as No. 101, are: Combustion chamber, 3¾"x4½"x5½"; mouth, 2¾"x4½"; length over all, 14"; height, 7½"; net weight, 18 pounds. With both bunsens burning the furnace consumes approximately 25 cubic feet of gas an hour.

Made by the Johnson Appliance Co., Cedar Rapids, Ia. Price complete, $10.

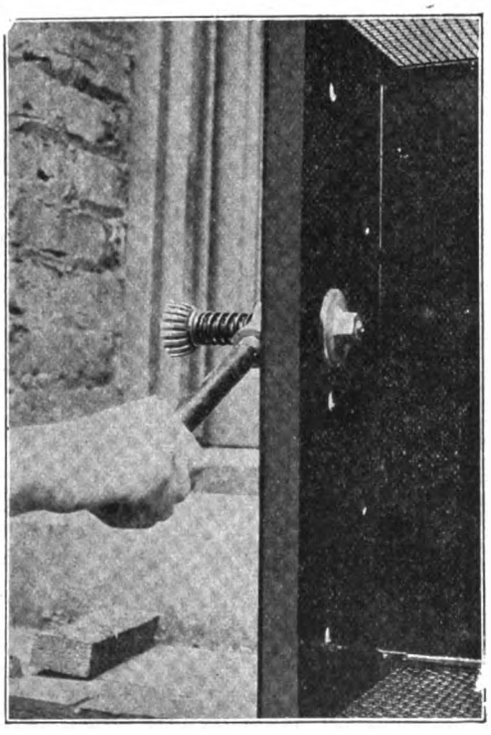


Johnson Gas Bench Burner.

NEW OPERATING CUTTER.

A device that will make easy the work of cutting metal of all kinds, fibre and even slate, has recently been introduced to the trade under the name of "Jiffy" cutter. It can be adjusted to cut any size hole in short order. When using the first operation is to drill a pilot hole and insert the stud of the cutter on the end of which a flange nut is secured. A few operations of the ratchet wrench cuts out a neat hole. The cutting is done by knives which are held in a swing chuck and are automatically fed by means of a spring between the chuck and the sham nut. It is claimed that this device does the work of a six-inch drill press and much more economically.

Manufactured by the Universal Tool and Appliance Company, Stroh Industrial building, Milwaukee, Wis. Write for prices and further particulars.



How Jiffy Cutter Operates.

WEAVER ROLLER JAW CHUCK.

This chuck is described as the smallest diameter chuck made for its capacity. It embodies a clever application of the "roller and cam" principle of construction, which gives the chuck unlimited driving power. The body has ground on its inner wall three concave cams to act with three rollers which are held in place by a cage. This cage is one piece, having on its upper end a gear sector to engage a worm set in the body and operated by a key which rotates the cage backwards or forwards, thus reducing or increasing the capacity of the chuck as the rolls are carried up or down the cam.

The jaws act between the shank of the drill and the cam faces of the inside of the body. It is readily seen that the grip of the jaws upon the drill shank increases automatically in proportion to the working resistance of the drill. With this chuck a very slight pressure on the key brings the rolls into contact with the shank of the drill sufficiently to prevent latter from falling out. As soon as contact is made the drill is automatically centred, making it essentially self-centering. The entire mechanism may be removed by extracting one retaining pin. This chuck is guaranteed to drive to the limit of its endurance any drill within its capacity. Broken tang taper shank drills may be used in this chuck with perfect satisfaction by simply taking a straight cut off the shank.

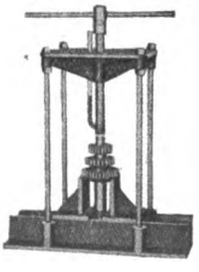
Made by Weaver Manufacturing Company, Springfield, Ill. Prices from $7 for No. 0 to $12.50 for No. 3. Also special sizes at other prices.

Weaver Jaw Chuck.

WHITNEY ARBOR PRESSES.

These presses are designed to meet the requirements of garage, service station or gasoline engine works where accurate results must be obtained. The Whitney has no gears, weights, wheels, cables or movable cross members that require lubrication, nor any shafts or bushings that necessitate making many adjustments in adapting it to service. The screw can be operated without in any way being interfered with. Twisting strain on any of the parts under pressure is prevented by means of a guide rod attached to a cap on the pressure end of the screw. The presses are described in detail in the maker's catalogue, which will be sent free upon application.

Made by Lewiston Motors, 238 Main St., Lewiston, Me. Write for prices.



Whitney Arbor Press.

HONN BABBITING JIG.

The Honn Babbiting Jig is especially designed for repair shops, for babbiting connecting rods and also for determining the true alignment of the pins. The jig, or V block, is adjustable, so that exact alignments are maintained and can be lengthened or shortened by loosening one nut and sliding the tail block into a slot which is milled at right angles with the stationary and movable V blocks.

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There are four shafts and eight collars furnished with the jig to fit various sizes of connecting rods. The piston pin may be used for the upper end of the rod.

Made by Honn & Son, 578 Stocking Ave., N. W., Grand Rapids, Mich. Retail price, $9.

NEW STARRETT HACK SAW.

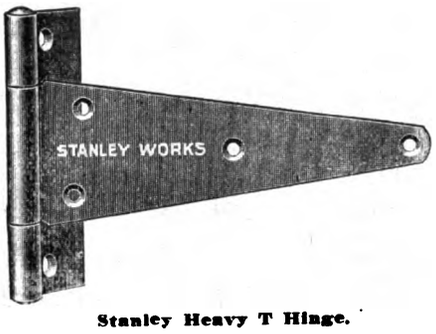
In the new Starrett Hack Saw Machine there are four outstanding features: The stroke adjustment, which makes possible a stroke of practically the full length of the saw blade, regardless of size of stock; the foot treadle for raising the saw frames by means of the operator's weight; the oil dash pot that allows the machine to be started when frame is up and prevents it from dropping and breaking the saw, as well as easing the saw onto the work to prevent the teeth biting so rapidly as to strip them; and the automatic locking device by which the saw is prevented from dragging on the return stroke and holding the saw frame at any height when the machine is stopping for setting work. The saw frame is mounted on a rectangular slide with a bearing 11¼" long, with adjustment for wear and provided with a quick acting saw tightener. The stroke of the saw is adjustable for stock from one to six inches in diameter. Twelve, 13 or 14-inch saws can be used. The height of the machine over all is 48 inches; to the top of the table it is 28 inches, and it occupies a floor space of 14 by 32 inches. This is the first machine marketed by the maker of Starrett tools and is protected by the Starrett guarantee of material and workmanship.

Made by the L. S. Starrett Co., Athol, Mass. Price, $165; with floor pan, $175. Detailed description and bulletin sent on request.

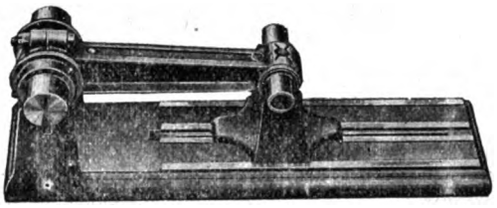
EZY-OUT SCREW EXTRACTOR.

The Ezy-Out Screw Extractor is designed for the express purpose of removing broken screws of all kinds, than which there is no more exasperating job in machine work. The device is designed somewhat like a cork screw, biting its way into the broken screw and then backing it out on its own threads. It is necessary only to drill a small hole in the broken screw and give a slight twist to the extractor in order to seat it firmly. The tighter the screw sticks the harder Ezy-Out grips and twists. The device is made of exceedingly tough steel, to withstand the strains to which it may be subjected, and it can be used on set screws studs, staybolts and screws of all kinds.

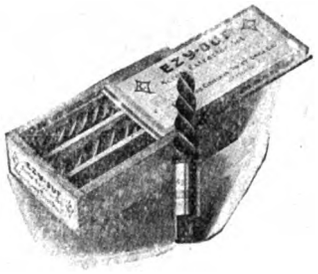
Made by the Cleveland Twist Drill Co., East 49th St. and Lakeside Ave., Cleveland, O. Prices quoted on application.



Stanley Heavy T Hinge.



Honn Babbiting Jig



Set of Ezy-Out Extractors.

LANE'S GARAGE DOOR HANGERS.

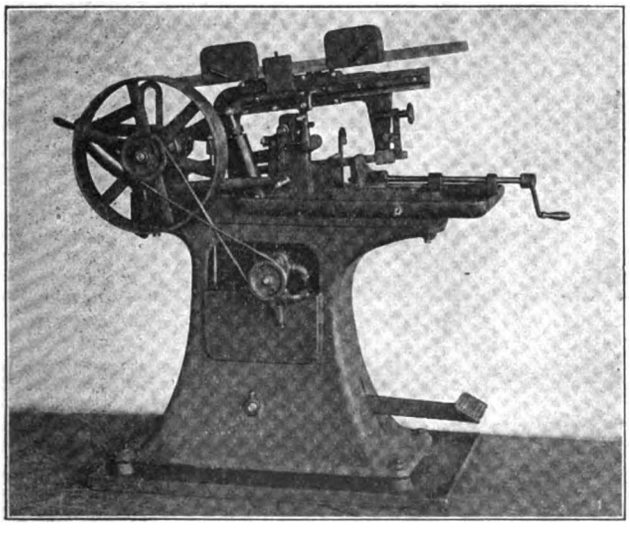
Lane's Garage Door Hangers and Tracks are designed to enable one to arrange the hanging of doors to meet any unusual condition. They are intended for sliding doors, and can be utilized to make a door slide across the front of a building and down the sides. They provide for maximum openings, practically the full width of the front of the garage, the double doors being hinged in the centre and folding either inward or outward as desired and sliding on the Lane hangers. These hangers have both side and vertical adjustment and prevent the doors from sagging and provide that they close snugly. The manufacturer's free bulletin describes and illustrates several ways of hanging doors to meet unusual conditions.

Made by Lane Bros. Co., Poughkeepsie, N. Y. Write for detailed data and prices.

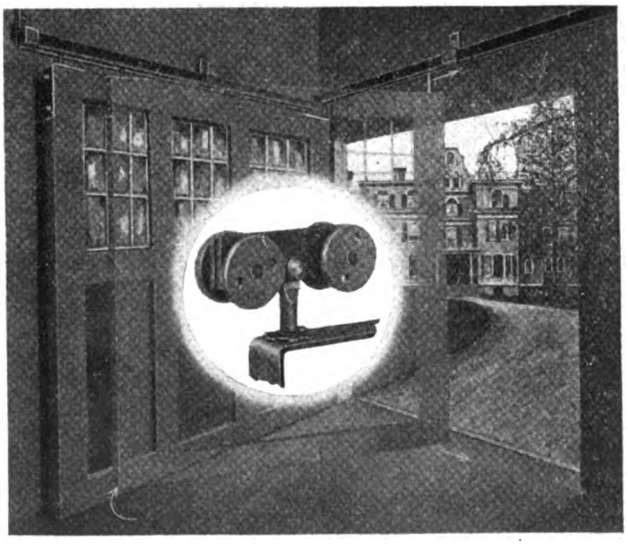
STANLEY HEAVY T HINGES.

The Stanley Heavy T Hinge for swinging garage doors is a new product recently announced by the maker of a large and well known line of hardware for garages. One of the chief features of the new hinge is its reverse pad, and the fact, as the maker declares, that it is necessary to mortise only the jamb of the door when attaching. The face leaf is attached direct to the door and the whole unit then easily and quickly mounted. The hinges, which are designated at the factory as No. SC963 J1, are finished in dead black japan and can be furnished in 10, 12, 14 and 16-inch sizes. They come packed with screws and are also included in the Stanley garage sets, which embrace hinges, bolts, latches, hasps, door holders and handles.

Made by the Stanley Works, New Britain, Conn. Apply to maker for prices, etc.



New Starrett Hack Saw Machine.



Lane's Garage Door Hanger.

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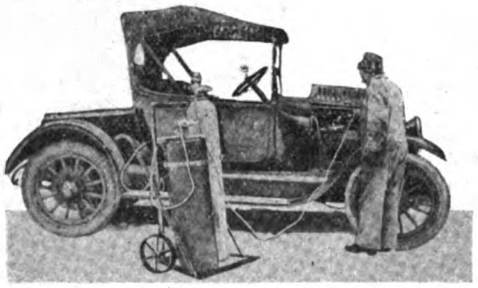
WATER WELDING

BEFORE—
JUNK



As a Carbon Burning Equipment.
Burning Out Carbon.

As a Battery Working Equi
Removing the Cells.

AFTER—
GOLD

ALL FOUR IN ONE—AL

Something new. Never before offered. Big value.
battery working, welding equipment. It will do wo
bank account. It is a money maker. It is a money

3 PELHAM STREET

WATERHOUSE W

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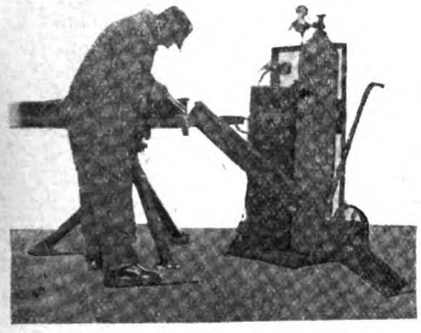
HOUSE OUTFIT



As a Cutting Equipment.
Cutting I Beams.

As a Welding Equipment.
Building Up Teeth on
a Cog Wheel.

BEFORE—
JUNK

AFTER—
GOLD

FOR THE PRICE OF ONE

mall cost. It is a combination welding, carbon burning,
ers in your repair business. It will do wonders in your
er. *Are you interested?*

ELDING COMPANY BOSTON, MASS.

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Labor and Money Saving Suggestions for the Motor Car Repairman.

PORTABLE STAND.
(Figure 1.)

When working on a car at a job that requires removal of a wheel and the use of a jack for support and it is desired to move the car into another position, it will be found that the procedure is bothersome and time consuming. The device shown on this page is intended to make such work easy and simple, it consisting of a non-adjustable support on rollers. It is made of a piece of T shaped angle iron bent as shown. On the under side of the bend a piece of pipe is welded in place, the pipe being of a size that will just fit over the axle spindle and leave room for the nut to be screwed into place. A brace, for the sake of obtaining rigidity when the weight of the car is on the support, should be placed about half way from the base and between the two arms. Any old piece of old metal stock will do. Swivel casters, preferably No. 937 roller bearing type, should be secured by bolts to the feet of the stand. This kind of caster is inexpensive and turns in any direction. Such a devise as this will be found to be very convenient when one does much repair or overhaul work in the garage, or in the case of a large garage where several cars are kept.

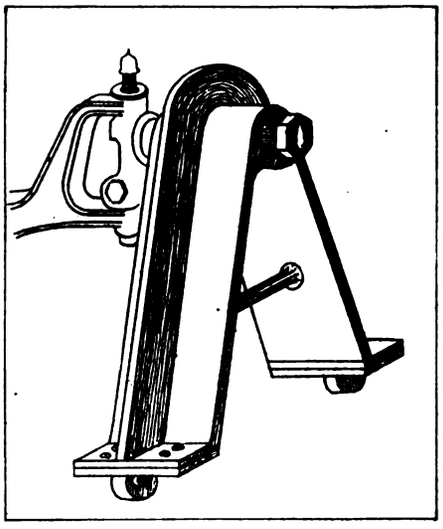

Fig. 1—Portable Garage Stand.

COTTER PIN SPREADER.
(Figure 2.)

An ordinary pair of slip joint pliers can be utilized for securing cotter pins in place. As these pliers are inexpensive, one can well afford to devote a pair to some particular use, hence the following suggestion: As shown in the illustration a small piece of metal is welded onto one of the jaws, as at A, and then ground to shape and size, as shown, so as to enter between the split ends of the cotter and spread and roll them over when pressure is exerted. A round recess is bored in the face of the other jaw to hold the head of the cotter pin. The illustration shows the use of the tool, which will also be found handy in extracting pins, by clamping the eye of the cotter between the recesses of one jaw and the wedge of the other and pulling sharply.

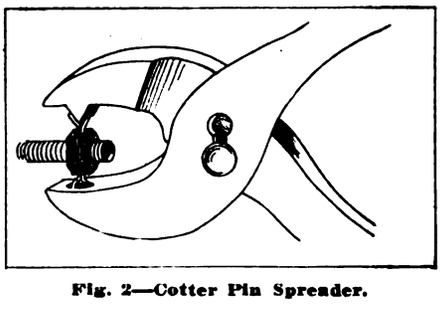

Fig. 2—Cotter Pin Spreader.

Files that have become dull and worn may be sharpened by letting them lay over night in a mixture of one part sulphuric acid and two parts water, afterwards rinsing and washing well in clear water. The acid should be held in an earthen vessel.

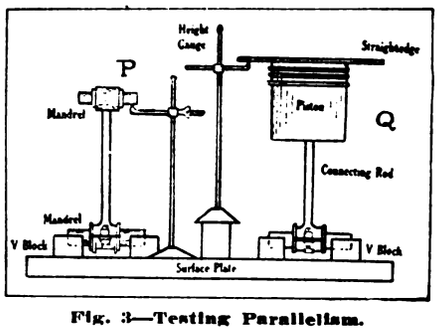

Fig. 3—Testing Parallelism.

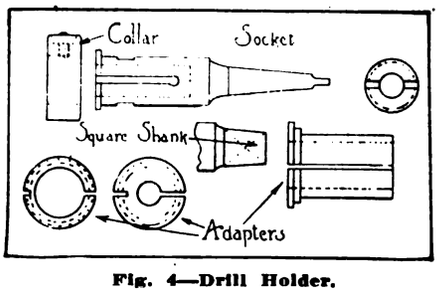

Fig. 4—Drill Holder.

TESTING PARALLELISM.
(Figure 3.)

If one suspects that a wristpin is out of alignment a certain and simple way to test the parallelism is shown in our sketch. The connecting rod should be bolted to a mandrel the same size as the crank pin, as shown at P. The mandrel is rested in two V blocks, which in turn is placed on a level surface plate. While the distance from the surface plate to the top of the under side of the wrist pin, first on one side and then the other, can be measured with a foot rule, the most accurate method is to use a height gauge, as shown in sketch. The gauge can be made easily or purchased in most any supply store. This test may be made with the wrist pin alone, in case the piston has a domed top, or as indicated at Q, with the piston in place, if it is a flat top type that will permit of resting a spirit level or straight edge on it.

DRILL AND REAMER HOLDER.
(Figure 4.)

An easily made drill socket designed for holding straight shank and broken drills, reamers and similar tools, is shown in our sketch. Adapters can be used to permit the use of drills of various sizes. The adapters can be turned from a piece of cast steel and may be made with a tapered shank on a square section member, the latter being suitable for use with a ratchet brace.

The holder has a recess bored in it, as indicated by dotted lines in sketch, either for fitting the shank of a drill or to take various split adapters. The loose collar fitting the outside of the holder is drilled, countersunk and tapped for a square headed set screw. The collar is slipped over the end of the holder, and the screw tightened, which operation presses the latter against the recess of the former, causing it to grip either the drill or one of the adapters. The latter are completely divided at one side, and partly slotted at the other, for the purpose of allowing them to be closed easily when pressure is applied on the outside holder. The slots should always coincide with the holder.

To fill holes in castings, etc., use a metal that expands instead of contracts upon cooling. One such metal may be made of nine parts lead, two parts antimony and one part bismuth.

A common nut drilled out so that it only contains 50 per cent. of a full depth thread will break a bolt before stripping.

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A PRACTICAL REPAIR HINT.

(Figure 5.)

If a spoke of a pulley or gear becomes cracked it can be easily repaired and restored to service by adapting the repair method shown in our illustration. It consists simply of drilling a hole through the metal and in the centre of the fracture and inserting a rivet. The rivet heads will prevent any side play in one direction and the shank will check the tendency of play at right angles.

In this way the weakened parts of the spoke will be held rigid in the severest of service.

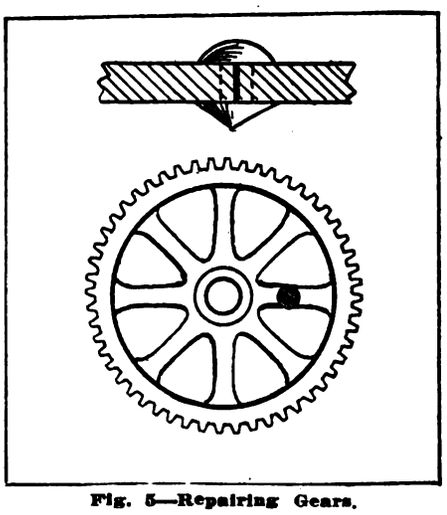

Fig. 5—Repairing Gears.

SECURING BUSHINGS.

(Figure 7.)

Even in the simple matter of securing bushings there is a right and a wrong way. For instance, if the method shown in the top view of our sketch is used, the cone-ended set screw may be screwed in so tightly as to cause the bushing to bulge slightly under the point and bind the shaft, especially if the wall of the bushing is light. Then again, if the set screw becomes loose, the bushing can move out of position, an undesirable feature if two holes are supposed to register. The proper way to secure a bushing is outlined in the lower view, in which it will be seen that the end of the screw is turned down to form a parallel side dowel that fits into a hole drilled clear through the wall of the bushing. This obviates bulging and holds the bushing in position at all times. A special drill and tap, which are shown in sketch, should be used. The drill is a two diameter tool, the small end being used to drill out the hole for the dowel pin, the larger lip being employed in drilling the hole that is tapped for the thread of the set screw.

WRENCH PIPE CUTTER.

(Figure 8.)

A pipe cutter is a valuable tool to have handy and one can easily and cheaply be made, as illustrated in sketch. This shows an ordinary monkey wrench with cutting discs attached. The discs, which are of steel, are easily obtainable at any hardware store and cost only a few cents. To attach, bore a small hole through each jaw of the wrench, attach the discs by means of stove bolts and tighten securely. A little space should be left for the discs to turn in. The jaws being adjustable this device can be used to cut different sizes of pipe.

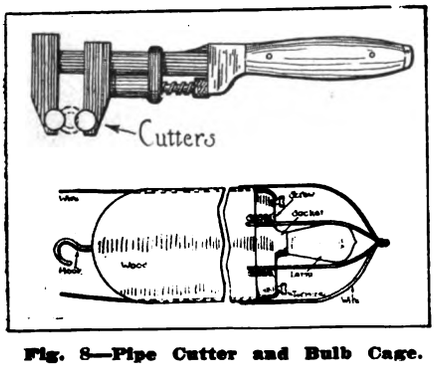

Fig. 8—Pipe Cutter and Bulb Cage.

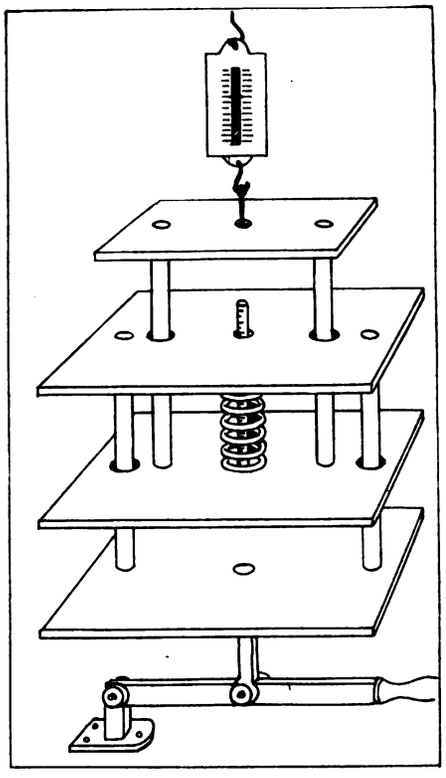

Fig. 6—A Device for Quickly Determining Tension of Valve Springs.

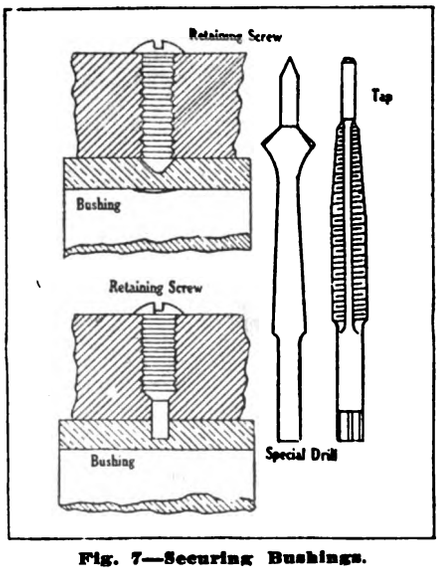

Fig. 7—Securing Bushings.

VALVE SPRING GAUGE.

(Figure 6.)

A device for readily measuring the tension of valve springs is illustrated herewith, it being based on a suggestion by the American Technical Society. It consists of two pairs of stiff sheet metal strips fastened together by rods or long carriage bolts and so arranged that one strip of each pair, sliding on the rods works between the two strips of the other pair. A glance at the drawing will make this clear.

One pair is fastened to a spring scale secured to a ceiling or other support, and the other to a hand lever. The spring to be tested is placed between the two strips, on one of which is a graduated rod, which slides through the other. When using the device pressure is exerted on the hand lever to compress the spring, register the tension on the spring scale and also showing the distance the spring has been compressed.

PROTECTING ELECTRIC BULBS.

(Figure 8.)

When using an electric bulb around an engine for illumination you should guard against accidental breakage. Our sketch shows a home made contrivance that has been proven practical. The socket of the lamp is screwed into a block of wood about three inches long and having two grooves along its opposite sides in which to carry the feed wires. A cage can be made, as indicated, out of several strands of fairly heavy wire, the loose ends being sunk into recesses in the block and secured by a binding of friction tape. A hook can be attached to the block by which to hang up the device when desired. When a bulb has to be replaced it can be done easily by springing apart two of the cage wires.

HACKSAW REFLECTOR.

(Figure 9.)

A repair man is frequently obliged to use a hack saw in places where it is dark and difficult to see the work. This trouble is obviated when a reflector like that shown in sketch is utilized. It consists of a disc of sheet brass or bright metal, which is turned so that there is a collar on one side. By cutting a slot through the centre the device can be slipped onto the blade of the saw. The reflector is held by a set screw and should be enameled white to obtain the best reflection.

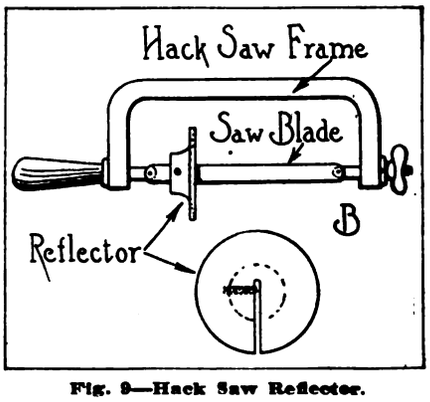

Fig. 9—Hack Saw Reflector.

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A. A. A. Tests Wilmo Manifold

In a Recent Demonstration Preheating Device Betters Maker's Claims for It

NOW that the tendency among motorists is to keep their cars in operation throughout the winter months, they find it necessary to equip their machines with devices that will preheat the gasoline charge before it enters the combustion chamber. The purpose of this is to increase the efficiency of the engine by increasing the combustibility of the gasoline.

Mileage Increased 40 Per Cent.

Several ways of doing this have been devised, but one of the best devices on the market and one that recently withstood gruelling tests by the American Automobile Association, is called the Wilmo manifold, which is marketed by the Whittier Motors Co., Chicago, Ill. This device is compact and simple in construction and application, and the maker claims it will increase the mileage per gallon from 20 to 40 per cent.

A test was held on Dec. 4, 1916, under the auspices of the A. A. A. at Mishawaka, Ind., a standard Ford touring car being used with standard factory equipment and three passengers were carried. The car, which had covered more than 20,000 miles, was first driven at the rate of 20 miles an hour equipped with its standard manifold. The gasoline consumption averaged 19.6 miles to the gallon.

The car was then equipped with a Wilmo combination manifold, and driven at the same rate of speed. The car traveled 28 miles on one gallon of gasoline, an increase of 42 per cent. A second test was then made, using a fuel mixture of half kerosene and half gasoline, and 26.6 miles was covered on one gallon, or an increase of 25.6 per cent.

Tested on a Studebaker.

Still another test was made of the Wilmo Manifold on a Studebaker Six with top and windshield up and carrying three passengers, making a total weight of 3570 pounds. Using a standard Studebaker intake and exhaust manifold equipment and straight commercial gasoline, an average of 10.6 miles was obtained to the gallon of fuel. The Wilmo combination manifold was installed on the same car and with the same load and using the same fuel, an average of 16.4 miles to the gallon was obtained, an increase of 54.7 per cent.

The manufacturer of the Wilmo Manifold has, for the sake of illustrating the economy effected by the device, computed the saving shown in these tests in dollars and cents, assuming that gasoline was selling at 20 cents per gallon and kerosene at 10 cents. Under these conditions, with straight gasoline and standard Ford equipment, 19.3 miles to the gallon would mean .0518 gallons per mile, which at 20 cents a gallon would mean 1.036 cents a mile. With the Wilmo Manifold and using one-half kerosene 26.6 miles per gallon means .0376 gallons per mile, and this with the combination fuel at 15 cents per gallon means .564 cents per mile, or a saving in fuel expense per mile of .572 cents. This is a percentage saving of 55.2 per cent.

Description of Manifold.

The Wilmo Manifold is a one-piece gray iron casting with an iron division plate cast integral, separating the upper or exhaust chamber from the lower or intake chamber, the latter connecting with the carburetor by a tapered inlet pipe. The hot exhaust gases passing out over the division plate heat it to a very high temperature and as the charge from the carburetor hits the under side of the plate before spreading out to the intake valves, it becomes completely vaporized. There are many efficient results from delivering a completely vaporized charge to the motor, among which are more power, a smoother running engine, little carbon accumulation, more flexibility or power and better lubrication.

SMITH MOTOR TRUCK BUILDS NEW PLANT.

The Smith Motor Truck Corp., Chicago, Ill., maker of Smith Form-A-Trucks, has broken ground for a second large plant. Work will be rushed in order to have it ready for occupancy by May 1. The new plant will be similar to the one erected last year and will have capacity for 300 attachments per day.

E. I. Rosenfield, vice president and general manager of the company, says that the production schedule for the current year, which was estimated at 30,000, will be nearly 50,000.

CLAY COUNTY, W. VA., HAS BUT ONE AUTO.

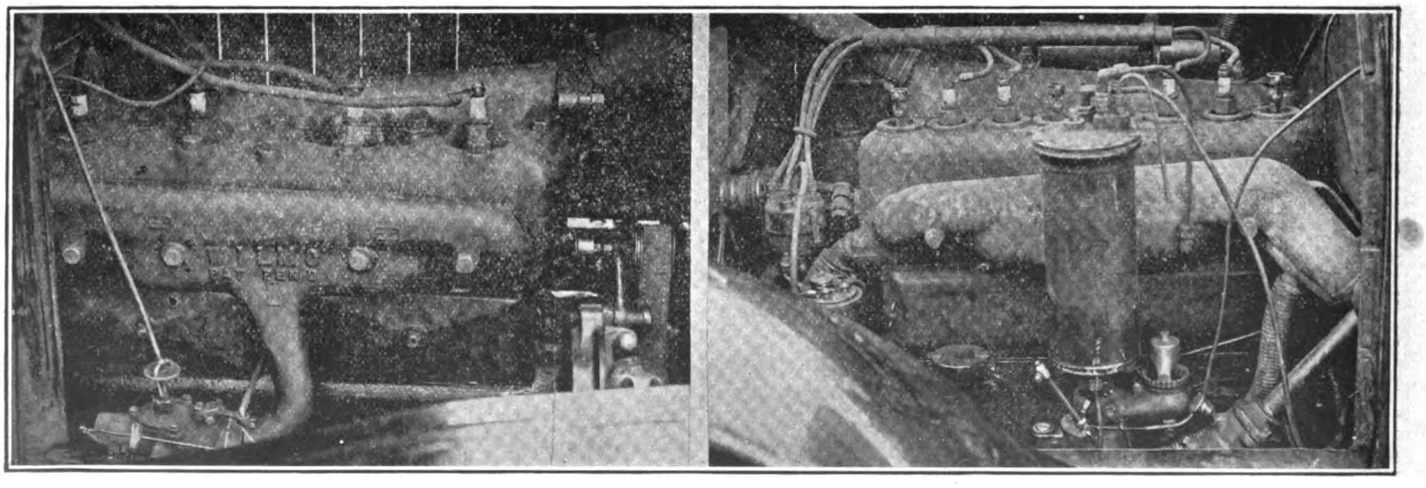
Clay County, W. Va., has the unique distinction of having but one citizen who owns a motor car. There is a population of 10,233 in the county, which covers an area of 332 miles. The whole state has a total of 15,636 autos, of which 1697 are owned in Ohio county.

TAXICABS SELL FOR $130 AND $230 EACH.

A buyer at the auction sale of the taxicabs belonging to the Mason-Seaman Co. of New York City secured 19 at a price of $130 each and another buyer secured a number at $230 each. The company was recently compelled to wind up its business as a result of the drivers' strike in New York.

GOODRICH COMPANY ISSUES TRUCK MANUAL.

The B. F. Goodrich Co., Akron, O., has issued its fifth annual edition of "Motor Trucks of America," which is a complete catalogue with specifications and illustrations of all the motor trucks being manufactured in this country at present. Information on the maintenance and repair of vehicles is also contained in the book, together with much other valuable data.



Wilmo Manifold Used in the A. A. A. Tests, the View at the Left Being the Installation of the Model T Ford and at the Right the Studebaker Four.

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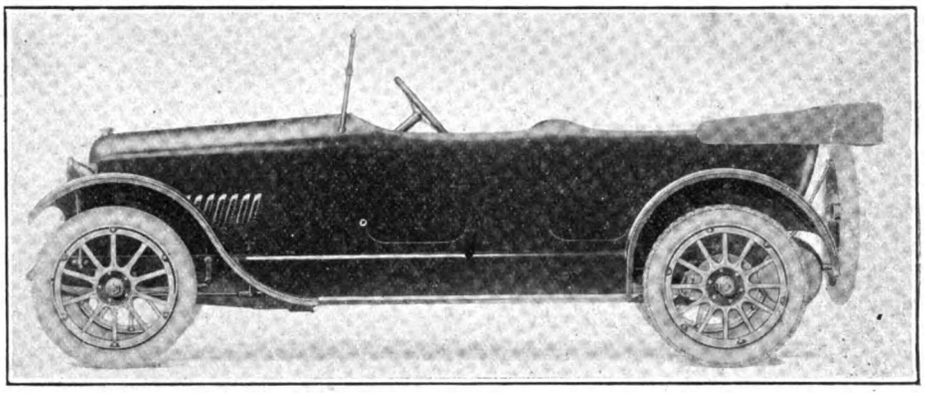
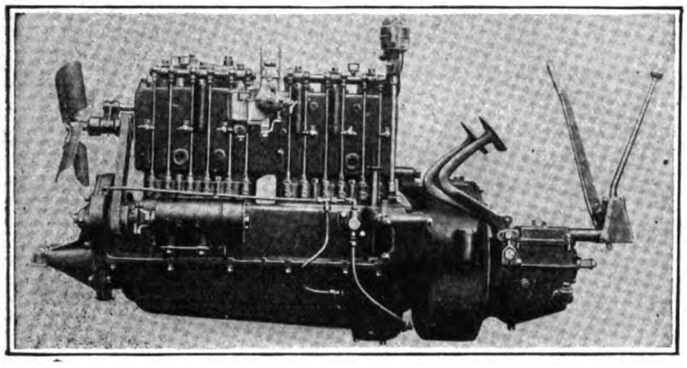
Enger Adds New Six Model for Year 1917

The Elgin Six is manufactured by the Elgin Motor Car Corp., Chicago, Ill., and sells for $985—Complete description in Automobile Journal, Jan. 10, 1917—Manufacturer has good proposition for dealers and agencies.



The New Elgin Six Touring Model.



The Falls Engine Used in New Elgin Six.

OUTSTANDING FEATURES OF THE CHASSIS.

Engine, I head, en bloc.	Fuel feed, vacuum.
Make, Falls, valve-in-head.	Starting and lighting, Wagner.
Bore and stroke, 3x4¼.	Battery, Gardiner.
Horsepower (S. A. E.), 21.6.	Clutch, Borg & Beck disc.
No. Cylinders, six.	Gearset, sel., unit, motor.
Lubrication, splash pressure.	Rear axle, full floating.
Cooling, thermo-syphon.	Wheelbase, 116 inches.
Ignition, Remy, vertical.	Springs, spec. cantilever.
Carburetor, Stromberg 1".	Tire sizes, 33x4, U. S.

NEW CONCERNS RECENTLY INCORPORATED.

Monthly Record of New Business Houses for which Charters Have Been Issued In the Various States and Classified According To Nature of Business.

Dealers In Automobiles and Motor Trucks.

Los Angeles, Cal.; The Springfield Motor Truck Company of California; $500; Anna F. Stone, Robert R. Orchard, J. L. Stone, Adeline E. Barker, George W. Dryer.

New Haven, Conn.; The E. L. Babcock Company; $10,000; to sell Oakland automobiles; Charles Hofacker, president; George L. Graham, vice president; Edmund L. Babcock, secretary and treasurer.

Wilmington, Del.; Hupmobile Sales Corporation; $50,000.

Wilmington, Del.; Springfield Motors Company, Inc.; $5,000,000; motor vehicles, engines, motors; Gerard Roberts.

Peoria, Ill.; Auto Kot Company; $10,000; to deal in motor cars and supplies; G. H. Page, J. W. Winzeler, G. T. Page.

Connersville, Ind.; The B. & M. Truck Company; $10,000; Alfred H. McFarlan, B. M. Barrows, Arthur Dixon.

Lexington, Ky.; Franklin Motor Car Company; $20,000; W. M. Phillipps, B. F. Stone, Stanley Stone.

Louisville, Ky.; Central Motor Car Company; $15,000; Allen H. Douglas, Robert L. Thomas, Horace C. Denavent.

Kansas City, Mo.; Double Drive Motor Company; $500,000; to build and deal in automobiles, tractors and motor vehicles of all kinds; Theodore Ditmore, Walter Beck, S. B. Gatewood.

Brooklyn, N. Y.; The Delco Service of New York, Inc.; $10,000; to deal in automobiles, vehicles and accessories; C. A. Prescott, W. F. Franklin, H. McKeefrey.

Brooklyn, N. Y.; Red Lion Garages, Inc.; $50,000; to deal in autos and to conduct a garage; C. Walter, S. Liberman, F. Moroney.

Bronx, N. Y.; G. E. S. Motor Car Service Company, Inc.; $10,000; to conduct a trucking and motor car service; W. Gullery.

Millbrook, N. Y.; Martin Truck and Body Corporation; $450,000; to deal in cars, carriages, automobiles, trucks; H. S. Perrigo, S. C. T. Dood, H. Thomson.

Morris, N. Y.; The Linn Manufacturing Corporation; $50,000; to deal in automobiles, motors, tractors and power vehicles; H. H. Linn, G. Whitman, L. R. Morris.

New York, N. Y.; Berger Automobile Company, Inc.; $10,000; Fred Berger, Edward L. Parris, Jr., William K. Sparrow.

New York, N. Y.; Plaza Contracting Company, Inc.; $10,000; to deal in autos and accessories; H. Waltflisch, K. and J. M. Swartz.

Millbrook, N. Y.; Bailey Non-Stall Differential Corporation; $105,000; to deal in automobiles, taxicabs; H. A. Gould, E. Munster.

Newpaltz, N. Y.; Johnston's Garage, Inc.; $30,000; to deal in motor vehicles and motors; C. J. Law, S. L. and G. E. Johnston.

Rochester, N. Y.; Caley & Nash, Inc.; $15,000; to deal in autos, carriages; M. J. Caley, J. S. Nash, F. T. Caley.

Rochester, N. Y.; A. M. Zimbrich Motor Company, Inc.; $5000; to deal in automobiles, trucks, accessories, parts; Albert M. Zimrich, Daniel Zimbrich, Mabel Zimbrich.

Canal Fuller, O.; Keller Motor Company; $10,000; to deal in motor cars; A. P. Keller, O. F. Keller, C. W. Keller, Code Keller, Margaret Keller, Iloe Keller.

Cleveland, O.; The Michigan Oldsmobile Company; to distribute the Oldsmobile in Michigan, Ohio and Eastern Kentucky; W. H. Collins, president; C. C. Chaffin, vice president and general manager; R. W. Hine, secretary and treasurer.

Parts and Fittings Makers Incorporated.

Dover, Del.; The Colton Demountable Rim Corporation; $2,500,000; to manufacture rims for automobiles; L. B. Sheldon, L. N. Downs, George H. Roeder.

Dover, Del.; Landover Auto Truck Company; $300,000; to deal in attachments for converting automobiles into trucks.

Wilmington, Del.; The Vesuvian Auto Heater Sales Company of New York; $30,000; to act as distributors for auto supplies.

Chicago, Ill.; Triangle Motors, Inc.; $10,000; J. A. Colyin, W. S. Mehaffey, W. H. R. Cesch.

Chicago, Ill.; Wright Auto Device Company; $1000; Richard J. Jammer, James B. McKeon, N. Gibson.

Christopher, Ill.; Walker-Rea Motor Company; $5000; H. M. Rea, Carl S. Walker, Ida M. Rea.

Evanston, Ill.; The MacBell Motor Company; $5000; D. M. Campbell, J. R. McKay, G. G. Florine.

Moline, Ill.; The Brown Motors Company; $20,000; Paul A. Biggs.

Indianapolis, Ind.; Burkhardt Motor Company; $10,000; Alexander Burkhardt, Lena Burkhart.

Lafayette, Ind.; Battery Service Company; $5000; L. E. Jamison, H. H. Johnson, F. E. Ball.

Portland, Me.; Chandler Motors of Maine; $10,000; to conduct an auto and garage business; J. F. Moroney, S. Lieberman.

Albany, N. Y.; Du Bois Piston Ring Company, Inc.; $180,000; to manufacture motors, engines, cars and reconstructing of motor cars; W. F. Foskett, G. Y. Lansing, E. A. Barvoets.

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Brooklyn, N. Y.; L. A. D. Motors Corporation; $25,000; Jack Abbott, Geo. C. Lewis, George J. Donahue.

Buffalo, N. Y.; Lutz Motor Company, Inc.; $200,000; J. H. McLean, George H. Lutz, Levi R. Lupton.

Elmira, N. Y.; Rotor Motors, Inc.; $10,000; Walter S. Smith, Jessie G. Hawley, C. Lewis Stephens.

Lockport, N. Y.; Harrison Radiator Corporation; $1,050,000; Ralph G. Goad, Frank A. Gaynor, Senoni Lockwood.

New York, N. Y.; Atlas Battery Company, Inc.; $1000; to manufacture batteries; A. Foshav, Russell Goldman, A. G. Thaanum.

New York, N. Y.; Chatham Electric Motor Corporation, Inc.; $10,000; to deal in electric motors and other vehicles; A. Kislik, S. and H. Lippman.

New York, N. Y.; Harriman Aircraft Motors, Inc.; $25,000; Frank H. Harriman.

Rochester, N. Y.; Aurora Battery Corporation; $25,000; to manufacture batteries for automobiles; H. H. Service.

Akron, O.; O'Neil Storage Battery Company; $10,000; to deal in batteries; S. A. O'Neil, W. P. O'Neil, George C. Austin, E. Brennan, I. A. Austin.

Memphis, Tenn.; Scott's Parts and Repairing Company; $3000; J. C. Scott, Tony Linzi, Tony Hagghianti, W. H. Whitehead, L. H. Graves.

Milwaukee, Wis.; Achen Motor Company; $15,000; I. W. B. Achen, Arthur Gardiner, Hundin Boorse.

Newly Organized Manufacturers of Cars.

Dover, Del.; Advance Automobile Accessories Corporation; $1,000,000; to manufacture and remodel automobiles; Herbert E. Latter, Norman P. Coffin, Clement M. Enger.

Wilmington, Del.; Automobile Accessory and Appliance Corporation; $1,000,000; to manufacture and remodel automobiles of all kinds.

Binghamton Motor Car Company, Inc.; Binghamton, N. Y.; $50,000; to manufacture autos, motors and conduct a garage business; W. G. Faatz, P. R. Faatz.

Irvington, N. Y.; Abercrombie & Dotsch, Inc.; $2000; Fred S. Abercrombie, Herman Petri, Fritz Dotsch.

Millbrook, N. Y.; Millbrook Manufacturing Company, Inc.; $1,375,000; A. C. McCord, J. T. Schlacks.

New York, N. Y.; National Security and Trust Company; $1,300,000; to manufacture automobiles, motorcycles; Herbert E. Latter, Norman P. Coffin, Clement M. Enger.

New York, N. Y.; Tractor Truck Company; $100,000; to manufacture all kinds of autos and trucks; Arthur A. Britton.

New York, N. Y.; White-Reitmann Company; $9000; John A. Reitmann, Joseph B. Kalmur, William P. Buchler.

Cleveland, O.; The Cumbe Automobile Manufacturing Company; $125,000; W. F. Moore.

Philadelphia, Penn.; Williams-Hoffman Company; $20,000; J. B. Williams, J. G. Fullman, J. B. Fullman.

Wilkes Barre, Penn.; Kinsella Devlin Motor Corporation; $20,000; A. P. Kirby.

Garages and Repair Shops Newly Chartered.

New Haven, Conn.; Saslow Brothers, Inc.; $10,000; to conduct a garage at 33 Temple street; Bernard E. Lynch.

Chicago, Ill.; Ballantine Garage; $1000; Edward B. Lucius, Albert E. Lucius, J. Hay Ballantine.

Decatur, Ill.; Wheeler Auto Garage Company; $30,000; Amos Wheeler, Clause M. M. Ping, N. Boomersbach.

Lancaster, Ky.; Rex Garage Company; $8000; W. M. D. Hammack, W. F. Champ, R. P. Gregory, Henry Moore.

Louisville, Ky.; Main Street Garage; $5000; J. F. Marx William Pfaffinber, T. Hicks Martin.

Louisville, Ky.; Thomas Garage; $25,000; William A. Thomas, Vincent Thomas, Florence J. Gathof.

Cambridge, Mass.; Newtone Garage Company; $20,000; Frank McDermott, Bernard E. McDermott, John W. Purington.

Salem, Mass.; Flynn Garage, Inc.; $10,000; William S. Cruickshank, president; Lewis O. Cook, treasurer; Joseph E. Daley.

Brooklyn, N. Y.; The Hut-Welker Briggs Garage Company; $10,000; to conduct a garage; C. Hutwelker.

Brooklyn, N. Y.; Kingsboro Garage, Inc.; $10,000; John B. Kodell, Edmund R. McCarthy, S. P. Schoenfield.

New York, N. Y.; Baldwin Harbor Garage, Inc.; $1000; Stephen Yates, Harry Pettit, C. M. Van Tassell.

New York, N. Y.; Aalders Garage and Repair Company, Inc.; $10,000; Henry J. Aalders, Martha J. Aalders, Rose Aalders.

New York, N. Y.; Commodore Garage, Inc.; $10,000; Harry A. Richard, A. L. Wright, M. H. Cooley.

New York, N. Y.; The Grefwich Garage; $5000; to operate cabs, carriages and to conduct a garage; G. Lippman.

New York, N. Y.; Morningside Garage, Inc.; $5000; Morris Cohen, Joseph H. Cohen, Irving H. Storch.

New York, N. Y.; Princess Garage Company, Inc.; $2000; Abr. Horowitz, Fannie Horowitz, Joseph Zorn.

Cincinnati, O.; The Premier Auto Repair Company; $10,000; Anton Arner.

New Philadelphia, O.; The Old Central Garage Company; $10,000; R. O. Finger, C. O. Hawk, Fred Schussler, Mrs. Margaret Finger, Mrs. Bernice Hawk.

Steubenville, O.; The Travelers' Garage and Automobile Supply Company; $25,000; Jesse E. Cohen, R. B. Cohen, G. Sampson, Morris Finesman, Frank Grossman.

Toledo, O.; The Universal Garage and Service; $5000; John E. Carey, F. Martin Hoffman.

Charleston, W. Va.; The Oilom Garage; $10,000; J. H. McClintic, W. G. Mathews, George M. McClintic.

Huntington, W. Va.; Gem Garage Company; $10,000; M. J. Ferguson, S. V. Williams, C. H. Williams, G. E. Merriman, L. L. McClure.

Accessories, Equipment and Supplies.

Dover, Del.; W. P. Burns Company; $150,000; to manufacture supplies and tools; W. P. Burns, W. V. Burns, Edward T. Fallows.

St. Louis, Mo.; S. D. C. L. Tire Service Company; $5000; to do a mercantile business in jobbing automobiles; F. C. D. Dobson, Augustus Choeteau, B. O. Leftwich.

Newark, N. J.; Kent Sales Company; $25,000.

Trenton, N. J.; National Auto Supply Company, Inc.; $25,000; to conduct a general supply business; Samuel D. Holzman, Lee Saman, James H. Winne.

Buffalo, N. Y.; Pierce-Arrow Motor Car and Truck Corporation; $11,250,000; to deal in accessories; E. S. Hemphill, R. J. Trimble, L. D. R. Trimble, D. Adkins.

Little Falls, N. Y.; The Electric Shop and Garage, Inc.; $5000; to deal in auto accessories and electric supplies; C. J. and T. P. McTierman, W. H. Goffry.

New York, N. Y.; Auto Oil Company; $10,000; Samuel Berman, Annie Berman, Isidor I. Tankus.

New York, N. Y.; Doyle Auto Products Company, Inc.; $10,000; A. R. Jarman, J. M. Doyle, J. K. Dalton.

New York, N. Y.; N. Y. and N. J. Automobile and Supply Company; $10,000; Louis Katz, I. Rothstein, Charles Ginsbury.

New York, N. Y.; Pioneer Sales Corporation; $10,000; K. L. Franklin, M. S. Watschko, L. B. Wood.

New York, N. Y.; The Security Tire and Rubber Company; $1,000,000; to manufacture tubes, tires and other accessories for automobiles; V. C. Bogardus, H. H. Waller, M. Friedberg.

New York, N. Y.; Stearns Tire and Tube Company; $250,000; to deal in tires, tubes, pneumatic tubes; A. Ott, H. Pearlman, M. Hawthorne.

New York, N. Y.; Tu-Shu Tire Corporation; $5000; William C. Moore, William B. Herrick, Gerard P. Herrick.

Cleveland, O.; The Clouse Tire and Repair Company; $25,000; M. Clouse, Alex W. Gillespie, James E. Philips, Joshua M. Myers.

Cleveland, O.; The Royal Tire Repair Company; $2500; John A. Pokorny, Edward L. Sindelar, Anton J. Ponkorny, John Polonorny, A. J. Sindelar.

Coshocton, O.; The Peerless Tire and Rubber Company; $10,000; W. P. Horton, Jr., J. S. Culp, Thomas E. Brennan, Herbert P. Lawrence, M. R. Glore.

Pittsburg, Penn.; Pittsburg Anti-Skid Chain Company; $5000; A. J. Heinzius, treasurer.

Ft. Worth, Tex.; The Miller Sales Company; $10,000; J. W. Milner, A. H. Kirby.

Indianapolis, Ind; Gordon-Little Company; $10,000; Charles C. Gordon, Frank E. Little, Frank W. Walters.

Indianapolis, Ind.; Stop-A-Leak Manufacturing Company; $10,000; E. L. Baker, C. E. Henderson, H. C. Austill.

Lexington, Ky.; Commercial Auto Body Building and Painting Company; $185,000; Walter R. Williams, F. A. Forry, J. D. Happer.

Bronx, N. Y.; The A. J. Slap Company, Inc.; $1000; Albert J. Slap, Frederick W. Weber, William Smart.

Ithaca, N. Y.; Thomas Aeromotor Company, Inc.; $67,000; George H. Abel, Harold N. Bliss, Jerome A. Fried.

Lake George, N. Y.; Sisson Wheelite Corporation; $10,000; Henry W. Sisson, R. Cutler, Frank D. Morehouse.

New York, N. Y.; A. B. F. Economizer Company; $300,000; Thomas J. Moloney, Edmund F. Eldridge, T. Eldridge.

New York, N. Y.; Illinois Auto Metal Works, Inc.; $1000; Samuel Katz, Nathan Love, Morris Limansky.

New York, N. Y.; Super Lighting Company, Inc.; $10,000; Saul S. Myers, Florence E. Hebbard, Agnes M. Sullivan.

Cleveland, O.; The Stanley Steam Car Sales Company; $10,000; Lewis W. Thomas, Sophia Z. Thomas, Mildred H. Thomas, Roscoe Z. Thomas.

Toledo, O.; The Gillespie-Curtin Company; $10,000; Charles J. Gillespie, John G. Gillespie, Peter T. Curtin, C. J. Zehale, William B. Duck.

Troy, O.; The Tracy Trailer Sales Company; $10,000; Charles A. Geiger, G. R. Harris, H. H. Tamplin, R. C. Sykes, C. N. Peters.

Pottstown, Penn.; North American Motor Company; $5000; William J. Shaffer.

Salt Lake City, Utah; The Allen Transportation Company; $10,000; to operate a taxicab and auto business; A. Allen.

Memphis, Tenn.; The Memphis Automobile Dealers' Association; Owen Lilly, Thomas H. Smart, G. F. Schlecht, F. N. Fisher, W. E. Woollen, Robert H. Stickley.

Newark, N. J.; F. S. Cassaway, Inc.; to manufacture automobile accessories and deal in storage batteries; William A. Smith, Thomas S. Woodruff, Florence L. Ennis.

New Jersey, N. J.; Federal Automobile and Supply Company; $100,000; C. M. Reeves, W. A. Walton, T. R. Roberts.

Newark, N. J.; The Manufacturers' Tire and Rubber Company, Inc., 335 Belmont avenue; $100,000; to manufacture machinery, motor vehicles, tires, rubber goods.

Rochester, N. Y.; The Martin Auto Accessories Corporation; $25,000; general automobile accessories business; W. Martin, G. H. Flower, A. J. Mahon.

Rochester, N. Y.; Scanlon Auto Supplies, Inc.; $10,000; to deal in accessories and auto parts; J. M. Scanlon, R. and O. W. Stanley.

Schenectady, N. Y.; The A. R. Sales Company, Inc.; $10,000; to deal in automobile supplies, accessories, vulcanizers; O. F. Bradt, R. Macdonald, J. M. Delaney.

Akron, O.; Kendall Tire and Rubber Company; $500,000; Lucas H. Kendall, K. P. Kahlke, Addison M. George, V. G. Warner, Carl F. Killian.

Pittsburg, Penn.; Craven Automobile Grease Cup Company; $10,000; T. M. T. McKennan, James F. Craven, John M. Patterson.

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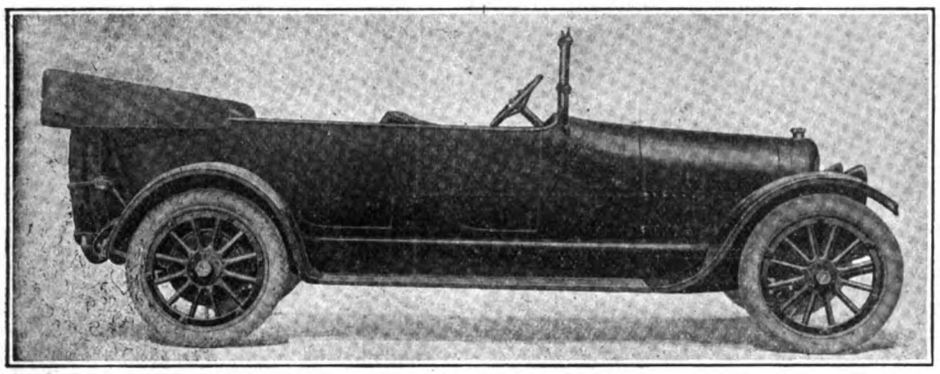
Apperson Eight-Cylinder Roadaplane for 1917



The Apperson Seven-Passenger Eight-Cylinder Roadaplane.

Made by Apperson Bros. Automobile Co., Kokomo, Ind.; price, $2000—Description in Dec. 25, 1916, Automobile Journal—Maker requires good agents.

Engine, eight-cylinder, V, in 4s.
Bore and stroke, 3¼x5, respectively.
Horsepower by S. A. E. rating, 33.8.
Lubrication is by forced feed.
Cooling is the thermo-syphon type.
Ignition is Remy, hand control.
Carburetor make is Rayfield.
Starting and lighting, Bijur make.
Clutch is the disc type.
Gearset, three-speed, sel., amid.
Rear axle is semi-floating.
Wheelbase is 128 inches.
Tire sizes, 35x4½, front and rear.

NEW BUSINESS CONCERNS AND CHANGES OF NAMES.

The Month's Record of Transfer of Ownerships and Opening of Garages, Agencies, Branches, Service Stations and Repairs Shops.

Recent Transfers of Business Ownerships.

Greeley, Col.; H. J. Decker has purchased the interest of W. C. Farr in the Chandler Agency and Service Company, located at 1018 Eighth avenue. The firm's name has been changed to the Decker Motor Company and will continue to do a general garage and repair business.

Hartford, Conn.; B. E. McMahon has taken over the Belden Garage at 25 Belden street.

Springfield, Ill.; F. A. Darling has bought the Krohne Garage.

Goshen, Ind.; Miller Brothers have purchased the Standard Auto Supply Company, located at 112 West Lincoln avenue.

Dubuque, Ia.; Charles J. Besky has bought Harry Kassler's interest in the Kassler Motor Company. He has taken on the Kissel line and will handle cars and tires.

Maquoketa, Ia; The Court House Garage has taken over the building formerly occupied by the Doran Auto Company on Second street.

Maquoketa, Ia.; The Doran Auto Company has purchased the business of the C. P. Bauch Automobile Company, located on Main street.

Lacygne, Kan.; Clyde Massey has purchased the interest of McCarthy in the Lacygne Garage. Welborn & Massey is the name of the firm.

Oakley, Kan.; A. N. Bull, Chevrolet agent, has bought the garage of C. C. Schuricht.

Oldstring, Kan.; The Miller Auto Company has bought the supplies of the Hartman Garage.

Otis, Kan.; The Kaiser Brothers have sold their garage to the Stang Brothers.

Baltimore, Md.; The Maryland Motor Company's garage has been purchased by the Sun Motor Sales Company.

Leominster, Mass.; The Pleasant Street Garage has been purchased by the Murphy Oil Company of Clinton, Mass.

Escanaba, Mich.; Alex Groos, agent for Paxon cars, and George Mackillican, have leased the automobile show rooms and garage at 611 Ludington street.

Hillsdale, Mich.; Pinkham & Wright have taken over the garage owned by George L. Rock, known as the Jonesville Garage.

Crookston, Minn.; George F. Welch has sold his interest in the Standard Garage to W. M. Arnold, who will have entire charge. The garage will handle the Franklin, Mitchell and Reo cars.

California, Mo.; B. Hamlin has sold his garage business to Wesley Moore. Mr. Hamlin still has the agency for Dodge.

Gallatin, Mo.; S. J. Riggs has purchased the interest of his partner, E. E. Dixon, in the local garage.

Grand Forks, N. D.; J. P. Read has purchased the interest of Edward D. Hanson in the Edward D. Hanson Automobile Company.

Kearney, Mo.; A. Brown of Excelsior Springs has purchased the Kearney Garage and has taken possession.

Painesville, O.; National Motor Supply Company of Cleveland, manufacturers of automobile accessories, has been purchased by the Painesville Metallic Binding Company and a large addition to the Painesville plant is now being constructed.

Worthington, O.; F. P. Welling has become owner of the Worthington Garage, having purchased the interest of George W. Wing in the concern. The concern will handle Ford cars and Firestone tires.

Meeker, Okla.; J. G. Loy has purchased the Central Garage from D. M. Fuller and will take possession.

Reading, Penn.; Aaron Aronsk and Samuel Perkin have purchased property on Fourth street and will erect a large garage.

Comance, Tex.; Charles Frazier has purchased the interest of J. C. Henderson in the Quick Service Garage.

Potosi, Wis.; Vogelsberg & Stroll have dissolved partnership and Mr. Stroll will continue the garage business.

Tacoma, Wash.; R. Aubry, together with L. Wire, have formed a partnership and will open a service station and repair shop at 2102 South C street, under the firm name of Aubry & Wire.

Tacoma, Wash.; The Commercial Garage has been taken over by Richard Rinne, who will conduct it.

Tacoma, Wash.; D. J. Murray and J. D. McKay have opened an accessory shop on Broadway.

New Business Locations and Removals.

Los Angeles, Cal.; The Model Vulcanizing Works has moved back into its old quarters at 1152 South Olive street. Beside conducting a general vulcanizing business the company carries a complete line of Goodyear tires and tubes.

San Francisco, Cal.; Waterproof Tire Products Company, 547 Van Ness avenue, is now located at 141 Grove street.

Oakland, Cal.; Cashing's Garage, 405 Santa Clara avenue, has moved to 1022 Eye street, Fresno, Cal.

Hartford, Conn.; The Exide Battery Station has removed from 14 Wells street to 120 Allyn street.

New London, Conn.; J. Tortora, 9 Moore Court street, has moved to 77 Humpstead street.

Chicago, Ill.; Mayo-Skinner Manufacturing Co., 164 E. 18th street, has moved to 2115 Elston avenue, Logan square.

Chicago, Ill.; Osgood Autolite Deflector Company, 302-339 S. Wabash street, has moved to 1911 Harris Trust building.

Chicago, Ill.; Shadburne Brothers Company, local agent for Moon cars, has moved into the building at 2700 Michigan avenue, formerly occupied by the Chicago Electric Company.

Indianapolis, Ind.; E. D. Crull has moved to 5322 Julian street. He was formerly located at 5460 University avenue.

Peck, Kan.; Vaught & Wright have moved into their new shop and garage at the corner of Main and Meriden streets.

New Orleans, La.; M. Zilbermann is now located in his new headquarters at 618 Baronne street.

Baltimore, Md.; Apex Garage, 1118 Cathedral street, has moved to 2320 Harlem avenue.

Brockton, Mass.; Jackson Motor Car Company, 73 Clinton street, has moved to 105 Belmont street.

Battle Creek, Mich.; The Paige Motor Car Agency has moved into the old Findley Garage at 97 West Main street.

Detroit, Mich.; Taylor Manufacturing Company, 969 Jefferson avenue, has moved

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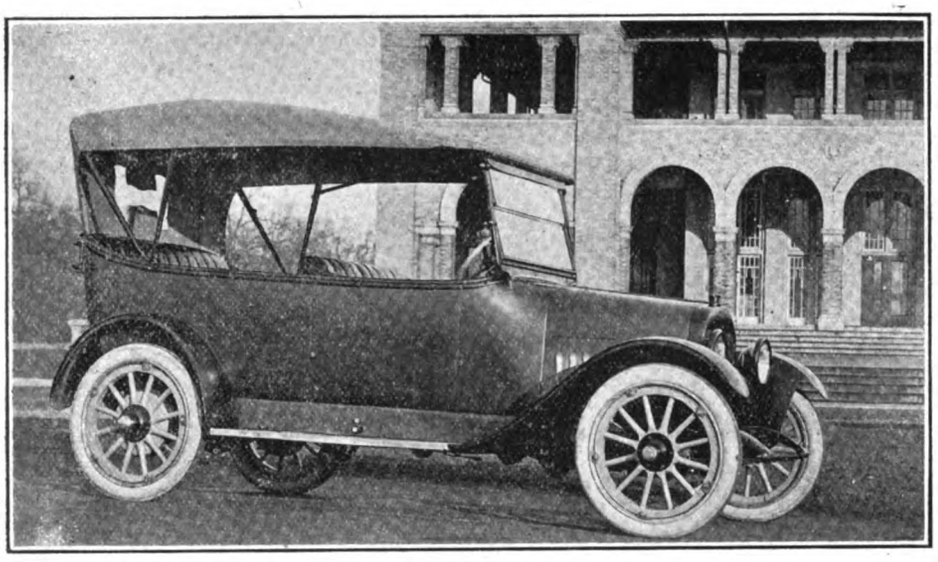
Features of the Harroun Four-Cylinder Model



The Harroun Four-Cylinder, Five-Passenger Car.

Made by the Harroun Motors Corp., Detroit, Mich.; price, $595—Description in Dec. 25, 1916, Automobile Journal—Harroun is placing agencies.

Engine, four-cylinder, I head, block.
Bore and stroke, 3¼x5¼, respectively.
Piston displacement, 174.2 cu. in.
Horsepower by S. A. E. rating, 16.9.
Valves in head, set at angle.
Lubrication is by force feed and splash.
Cooling is by thermo-syphon system.
Ignition, Bosch single type.
Carburetor is a special design.
Fuel feed is by gravity system.
Starting and lighting, Remy make.
Clutch is cone running in oil.
Gearset, three-speed, unit, motor.
Rear axle is full floating type.
Rear springs, full cantilevers.
Wheelbase is 107 inches.
Tire sizes, 28x3, front and rear.

to Redford, Mich.

Grand Rapids, Mich.; Phelps Auto Sales Company, Michigan street and Lafayette, has moved to 114 Michigan street, N. W.

Grand Rapids, Mich.; West Side Garage has removed to 840 Sigsbee street, S. E.

Petoskey, Mich.; The Carey Auto Company is occupying the Lee building on Main street for show rooms.

St. Louis, Mo.; Newell Motor Car Company, 304 N. 12th street, has moved to 3003 Locust street.

Manchester, N. H.; Amosberg Auto Company, 16 Prince street, has moved to 61 George street.

Raton, N. M.; E. J. Love Motor Company has moved to Carthage, N. M.

Buffalo, N. Y.; Schuster George, 89 Fields street, has moved to 722 Beacon street, Boston, Mass.

Buffalo, N. Y.; W. & L. Manufacturing Company, 118 South Elmwood street, has moved to 19 Lawrence place.

Newburgh, N. Y.; Meyer Manufacturing Company has moved to 251 East Broadway, Seaside Beach, Milford, Conn.

New York, N. Y.; Jacobs, B. G. Agency, Fifth avenue, has moved to 42 Northern avenue.

Troy, N. Y.; Hoosick Garage, Hoosick street, has moved to R. F. D. No. 1.

Syracuse, N. Y.; Syracuse Taxi and Auto Company, 511 South Clinton street, has moved to Florence Flats.

Rochester, N. Y.; Gilles-Baird Motor Company, 96 Clinton avenue, S., has moved to 287 State street.

Cleveland, O.; Lakewood Garage, 11913 Detroit street, has removed to 2026 West Boulevard.

Cleveland, O.; Torbenson Gear and Axle Company, located at E. 72 L. S. & M. S. R. R., has moved to 1115 E 152 (Collinwood).

Mansfield, O.; White Motor Device Company has moved to 602 Woodward avenue, Detroit, Mich.

Muskogee, Okla.; The Anderson Motor Car Company has moved into the garage building recently vacated by the Muskogee Garage at Seventh and Okmulgee avenue.

Muskogee, Okla.; The Muskogee Garage has moved into new quarters at the corner of Seventh and Okmulgee avenue.

Oklahoma, Okla.; Lee Motor Car Company, 137 W. Main street, has moved to 523 South Walker street.

Providence, R. I.; Dutee W. Flint has moved to Albany avenue. He was formerly located at 19 Snow street.

Providence, R. I.; Goodwin Sherman Motor Car Company, 249 Washington street, has moved to 131 Fountain street.

Waxachachie, Tex.; The Waxachacie Storage Battery Company will secure new quarters in the Hupp Garage as soon as it is completed.

Yoakum, Tex.; W. E. Pound has purchased the Yoakum Machine Shop and Garage, which is located on North Front street.

Appleton, Wis.; Main Auto Company has moved to Box 45, Clintonville, Wis.

Milwaukee, Wis.; Cartercar Wisconsin Company, 2713 Grand avenue, has moved to 707 Chestnut street.

Garages and Repair Shops Newly Chartered.

Chicago, Ill.; The Harold Henry Garage has opened at 4913 Broadway.

Shenandoah, Ia.; J. R. Stickler has opened a garage.

Beloit, Kan.; Gates & Tipton have opened a garage.

Wichita, Kan.; William Brunker has opened a garage and machine shop at 232 South Water street.

Manistee, Mich.; Adolph Yonder and Frank Decker have opened a new garage on Arthur street.

Bemidji, Minn.; W. P. Foley has opened a new garage.

Crosby, Minn.; Charles Jocks has completed a garage.

Houston, Minn.; Abraham Brothers have opened a modern and up-to-date garage on Main street.

Houston, Minn.; Onsgaard & Sons has opened an up-to-date garage on Cedar street.

Mahnomem, Minn.; The Wright Garage has opened for business.

Mountain Lake, Minn.; W. W. Siemens will open a repair shop.

Winona, Minn; Thomas Mann has opened a temporary garage at 215 East Third street.

DeKalb, Mo.; Laurence Lusas has opened a garage.

Boulder, Mont.; Budsey & Slad have opened a new garage.

Canton, O.; The Advance Motor Car Company has opened the garage located at Market avenue and Sixth street, which was formerly occupied by the Standard Motor Car Company.

Dayton, O.; The Kinsey Motor Car Company has opened a garage and display rooms at the corner of Third and Perry streets.

Toledo, O.; R. W. Hill has opened an automobile repair shop at Collingwood and Central avenue.

Lancaster, Penn.; F. N. Johnson has opened a tire repair shop.

Comanche, Tex.; Lemons & Bruton Garage is the name of the new garage recently established on Oil Mill street.

Whitewood, S. D.; H. H. Vroman has opened a repair shop.

LaCrosse, Wis.; Schuleter-Ivers Auto Company has established a garage on East Bluff street.

Tilleda, Wis.; Fred Lange has completed his new garage and repair shop.

Agencies, Dealers and Service Stations.

Lodi, Cal.; Superior Cyclery has opened a Willard service station at Pine and School streets.

Salinas, Cal.; Anderson & Doyle, 425 Soledad street, will conduct a Willard service station.

Columbus, Kan.; Gleason Brothers have opened a garage.

Indianapolis, Ind.; The Olin Sales Company, Ford agents, will open a new service station at 426 North Meriden street.

Great Bend, Kan.; The Electric Battery and Repair Company, 1217 Kansas avenue, will have charge of the Willard service station.

Topeka, Kan.; The Cadillac Sales Company, located at 514 Jackson street, has changed its name to Cowdry Motor Car.

Attleboro, Mass.; Capron's Garage will conduct a Prest-O-Lite service station.

Boston, Mass.; The Abbott & Downing Company has opened a branch for its motor truck department at 84 Brookline avenue.

Lowell, Mass.; The Myer's Auto Supply Company has opened for business at 233 Middlesex street.

Kearney, Neb.; The Noyes Battery and Electrical Service Company will open an automobile accessory house at 2311 Central avenue, which will be headed by Bert Noyes. The concern will carry a full line of electrical and battery equipment.

Lincoln, Neb.; The Capital City Tire Company has taken the agency for Mohawk tires.

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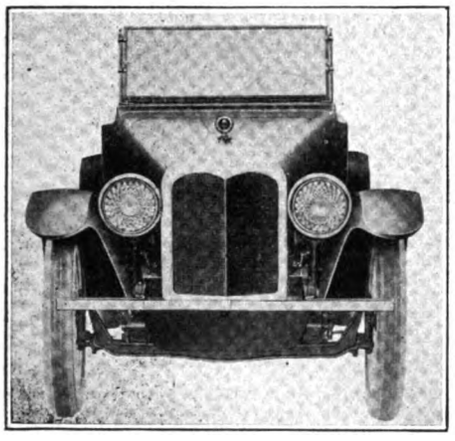
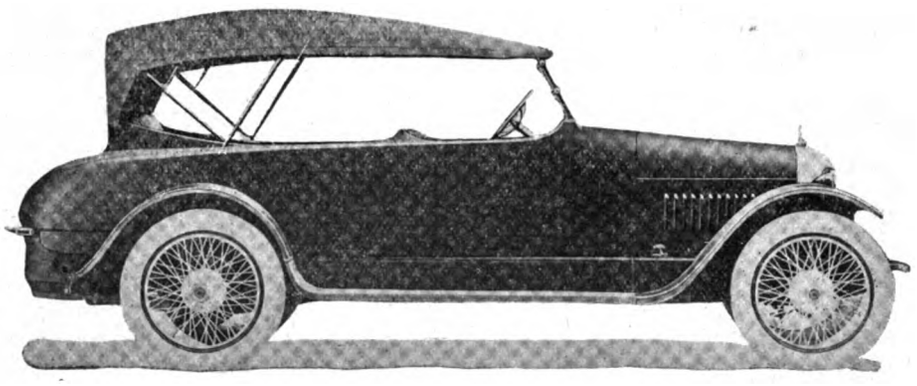
Features of the Pathfinder the Great Model



Distinctive Pathfinder Radiator.



The Pathfinder the Great 12-cylinder touring model, the most radical body revelation of the year; made by the Pathfinder Motor Car Co., Indianapolis; price, $3250—Several territories still open for agents. Body features are a disappearing top and an unusual revolving tire carrier in rear.

FEATURES OF THE PATHFINDER CHASSIS.

Engine, 12-cylinder V, cast twin six.
Bore and stroke, 2⅞x5, respectively.
Horsepower by S. A. E. rating 39.68.
No. cylinders, 12.
Lubrication, force feed system.
Cooling, by centrifugal pump.
Ignition, Delco two-unit system.
Carburetor, Stromberg latest type.
Fuel feed, gravity tank under hood.
Starting and lighting, Delco make.
Battery, Willard make.
Clutch, multiple disc.
Gearset, sel., unit motor, three-speed.
Rear axle, full floating type.
Wheelbase is 135 inches.
Tire sizes, 35 by 5, Silvertown cord.

JANUARY'S RECORD OF NEW BUILDING PLANS.

Contracts Made and Plans Contemplated for Alterations or the Building of Garages, Repair Shops, Service Stations and New Plants.

Factories, Garages and Repair Shops.

Bridgeport, Conn.; Irving B. Davis will erect and maintain a public garage in rear of 22 State street.

Clinton, Ill.; Todd & Tuggle will occupy the garage being erected on North Quincy street. The garage will be one story high and up-to-date.

Peru, Ill.; The Hassler Auto Sales Agency will erect a new building at Sixth and Peoria streets.

White Heath, Ill.; Leonard Luscaleet and Lee Scott will open a garage.

Colfax, Ia.; Everett & Baker will erect a one-story brick building which will be 50 by 100 feet.

Warkon, Ia.; Phil Klingle is planning to erect a garage on East Main street.

Colby, Kan.; Owens Brothers are building a garage.

Cottonwood Falls, Kan.; Roy Moore is erecting a cement block garage.

Courtland, Kan.; E. C. Aspegren is building a garage.

Dexter, Kan.; C. E. Radcliff will build a garage.

Easton, Kan.; Herbert Wahaus is opening a garage.

Junction City, Kan; C. F. Klamm is building a new concrete garage.

Severy, Kan.; Songer & Rowe are erecting a garage.

Deer River, Minn.; Napoleon St. Peter will build a garage.

Goodridge, Minn.; Lindstrom & Gran have begun building a garage.

Minneapolis, Minn.; Gerde Auto Company will build a garage at Lake street and Elliot avenue.

St. Paul, Minn.; The Roberts Motor Company will erect a $12.000 garage of brick on Seventh street, between Walnut and Chestnut streets.

Holly, Mich.; J. R. Inskeep will erect a new garage on the northeast corner of Saginaw and Maple streets.

Fredericktown, Mo.; Ferringer is erecting a new building.

Moberly, Mo.; The Reichel Motor Company is building a two-story garage.

Rudyard, Mont.; Christ Wehr will build a garage.

Omaha, Neb.; Busk & Wind are erecting a garage on Harney street.

Glenburn, N. D.; Thilfred Medalen will open a garage.

White Lake, S. D.; Joe Sheldon has begun the erection of a cement block garage, 27 by 70 feet.

Cleveland, O.; Joseph Novogroder will erect stores and a garage at 10509 Miles avenue, to cost $12,000.

Ingalls, Okla.; Harry Williams will erect a garage east of the blacksmith shop.

Houston, Tex.; J. A. Reynolds will erect a new one-story brick garage at Polk street for O. L. Cochran, Jr. It will cost $9500.

Kenosha, Wis.; J. A. Jacolsen, local distributor for Jeffery cars, has erected a new building at 1713 West Sixth street, to be operated as a garage and service station.

Mauston, Wis.; Otto & Newland have broken ground for their new garage, to cost about $5000.

Mendovi, Wis.; James Blum is completing work on his new garage and repair shop and has taken occupancy.

Nelson, Wis.; The Hillman Auto Company is building a one-story garage and repair shop, 46 by 80 feet, of brick and hollow tile.

New Lisbon, Wis.; Bunker & Sanderson will build a new garage.

Prentice, Wis.; H. R. Blomberg is having plans prepared for a new garage and machine shop adjoining the present building. It will be two stories high, 30 by 120 feet.

Tomah, Wis.; A. H. Gray will open a garage.

Alterations, Improvements and Additions.

Seaton, Ill.; Carlston & Henry Garage is being enlarged owing to the increasing business in both the repair shop and sales room.

New Orleans, La.; The Sutter Motor Car Company, 1035 Carondelet street, has been remodeled into an up-to-date show room and service station. The company has the agency for Westcott cars and Koehler trucks.

Baltimore, Md.; The King Motor Sales Company will remodel the building at 1700 North Charles street as a sales room, service station and garage.

Chisholm, Minn.; Matt Borlim will remodel his building into a garage.

Wanamingo, Minn.; Martin Tiller has completed an addition to his garage.

Hinsdale, Mont.; A. P. Erickson has completed an addition to the Motor Inn.

Lampasas, Tex.; H. B. Allen has purchased the property on the corner of Second street and Western avenue and will remodel the building into a garage.

Appleton, Wis.; The Central Motor Car Company is remodeling its garage and repair shop and installing considerable new shop equipment.

Cudahy, Wis.; Federal Rubber is building an addition which will cost $200,000.

Lodi, Wis.; F. L. Falkenstein is building a concrete addition to his garage to be used for repair shop purposes. The dimensions of the addition are 36 by 50 feet.

Milwaukee, Wis.; Ney & Shanke, 2513 Vliet street, will build an additional story to the garage. It will be 50 by 120 feet.

Mukwonago, Wis.; Goetsch Brothers are repairing and reconstructing their garage building.

Reeseville, Wis.; Otto A. Sell and John Kleinmann, Ford dealers, are completing work on a new garage and service station.

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Contemplated Plans and Specifications.

Wilmington, Del.; Morris Chaikin, 206 W. Fourth street; two-story garage, 50x75; $8000.

Wahington, D. C.; Columbia Auto Supply Co.; R. L. Lenne, manager, 3037 14th street; one-story garage, 63x212.

Atlanta, Ga.; W. E. Wimpy; four-story automobile salesroom, 150x50; foot site; $11,400.

Chicago, Ill.; Motor Delivery Service Co.; one-story; garage, 75x125; $10,000.

Chicago, Ill.; A. C. Burtar, corner Crawford and Madion streets; two-story commercial garage, 60x150; $22,000.

Chicago, Ill.; R. C. Wittenburg, 1737 Milwaukee avenue; one-story garage and show room, 52x90; $12,000.

Chicago, Ill.; R. Tedor, three-story public garage, 50x112; $32,000.

Chicago, Ill.; E. A. Ballantine, 726 W. 66th street; one-story garage, 100x128; $12,000.

Naperville, Ill.; Cramer Brothers & Fry; two-story commercial garage, 50x30.26; $6000.

Nashua, Ia.; L. Harrison, Ford agent; one-story garage, 36x110; $5000.

Tipton, Ia.; C. K. Ross; one-story public garage, 50x74; $7000.

Begalusa, La.; E. L. Knight; two-story garage, 70x40; $10,000.

Baltimore, Md.; John J. Carlin, 2801 Ulmans avenue; one-story garage, 160x125; $18,000.

Boston, Mass.; Edward G. Stanley and C. S. Harlow, 509 Rutherford avenue; one-story public garage, 59x110 and 7x17; $30,000.

Boston, Mass.; Coleman & Gilbert, 331 Huntington avenue; two-story automobile building, 100x150.

Boston, Mass.; Brighton Avenue Realty Company, care J. J. Prindwille Company, Framingham, Mass.; one-story public garage, 60x250.

Cambridge, Mass.; Joseph M. Dolan, 14 Malcolm road; one-story public garage, 50x75; $4000.

East Boston, Mass.; Samuel Fine, 107 Morris street; one-story public garage, 85x100.

Fall River, Mass.; Nathan Yamins, 78 Bedford street; two-story public garage, 82x100; $25,000.

Fall River, Mass.; James B. Quinn; 201 Ridge street; one-story garage, 50x150; $12,000.

Somerville, Mass.; Ezra Andelman, 109 Prospect street; one-story public garage, 44x80; $15,000.

Somerville, Mass.; S. S. Eisenberg, 59 Everett avenue, Chelsea, Mass.; one-story public garage, 75x90; $18,000.

Springfield, Mass.; Isaac Richmond, 222 Chestnut street; two-story garage, 110x107; $10,000.

Worcester, Mass.; J. Francis Southgate, 82 Mechanic street; two-story public garage, 60x114.

Detroit, Mich.; Cadillac Motor Car Company, 1348 Cass avenue; seven-story sales building, 90x265.

Saginaw, Mich.; F. D. Burton; one-story garage and enameling building, 40x150 and 50x70.

Minneapolis, Minn.; John D. Hawley, 3322 Blaisdell avenue; one-story commercial garage, 48x122; $10,000.

Minneapolis, Minn.; C. M. Fitch, 87 Western avenue; one-story public garage, 55x94; $4000.

Joplin, Mo.; Indiana Truck Company, Marion, Ind.; garage exclusively for trucks; one story, 50x150; brick; including equipment, $26,000.

Kansas City, Mo.; F. E. Scott; two-story truck garage; $19,000.

Kansas City, Mo.; George H. Siedhoff; one-story truck garage; $6000.

Omaha, Neb.; Home Builders Company; two-story garage, 99x132; $30,000.

Glen Gardner, N. J.; State of New York; two-story garage and shop, 25x50; $5000.

Newark, N. J.; J. S. Schaedel, 322 Warren street; one-story garage and show room, 70x100; $75,000.

Newark, N. J.; Frank Megaro, 88 Seventh avenue; one-story public garage, 80x39x45; $9000.

Newark, N. J.; Louis William, 682 South 12th street; one-story garage, 50x67; $6000.

Trenton, N. J.; Edward C. Brown, Greenwood avenue and Chamber street; two-story garage, 60x75; $8500.

Brooklyn, N. Y.; David J. Keler, 208 Norwood avenue; one-story garage, 50x100; $8000.

Brooklyn, N. Y.; Gulf Refining Company, Frick Annex, Pittsburg, Penn.; one-story garage; $5000.

Brooklyn, N. Y.; Joseph C. Cucker, 856 Nostrand avenue; one-story garage, 50x131; $10,000.

Brooklyn, N. Y.; Hymann Rappaport, 1815 Prospect avenue; two-story garage, 60x100; $18,000.

Brooklyn, N. Y.; Michael Martin Estate; one-story garage, 75x100 $10,000.

Brooklyn, N. Y.; Bush Terminal Company, 100 Broad stret, New York; one-story garage, 22x77; $5000.

Brooklyn, N. Y.; Paul Longone, 352 Metropolitan avenue; two-story garage, 40x80; $10,000.

Brooklyn, N. Y.; Edward C. Smith, 420 Oakland street; one-story garage, 25x100; $4000.

Brooklyn, N. Y.; Elias Bernstein, 5406 Third avenue; one-story garage, 54x100; $10,000.

Brooklyn, N. Y.; Howard J. Smith, 256 St. James place; one-story garage, 30x145; $9000.

Brooklyn, N. Y.; Dicky, Lemberg Company, Suffern, N. Y.; one-story garage, 85x85; $4500.

Brooklyn, N. Y.; William C. Edwards, 12 Howard street; three-story garage, 50x100; $18,000.

Brooklyn, N. Y.; J. A. Gorman, 4 Court square; one-story garage, 25x100.

Brooklyn, N. Y.; F. Weis, 862 De Kalb avenue; two-story garage, 68x99; $30,000.

Jamaica, L. I., N. Y.; Jamaica Realty Company; one-story garage, 60x93; $15,000.

New York, N. Y.; Christian Vorndrau, 412 E. 141st street; two-story garage, 81x95; $40,000.

New York, N. Y.; Anna W. Smith, care Jacobs & Simon, 4307 Broadway; one-story public garage, 159x725; $40,000.

New York, N. Y.; Daniel Levy; eight-story garage 44x98; $75,000.

New York, N. Y.; William Gullery, 1472 Washington avenue; one-story garage, 79x100; $11,000.

New York, N. Y.; Henry J. Semke, 192nd street and Grand Concourse; three-story garage, 26x175; $15,000.

New York, N. Y.; James S. Maher and John J. Gillen, 431 W. 14th street; two-story public garage, 100x98; $45,000.

New York, N. Y.; Walter Piano Company, 153 East 59th street; six-story garage; $70,000.

New York, N. Y.; John W. Decker, 2605 Grand Concourse; two-story garage, 76x100; $15,000.

Londonville, N. Y.; John Hughson; one-story garage, 22x85; $2000.

Troy, N. Y.; Kalleck Nassour, 144 Fourth street; three-story garage and storage station, 27x72; $5000.

Troy, N. Y.; Edmund Fitzgerald; two-story private garage, 24x36; $5000.

Greensboro, N. C.; Gate City Motor Company; two-story fireproof garage, 67x185; pressed brick and plate glass front; $20,000.

Cleveland, O.; H. M. Clark, 2115 Maple-dale avenue; one-story public garage, 80x75; $6000.

Cleveland Heights, O.; M. C. Stone, 1059 W. 11th street; two-story public garage, 50x115; $60,000.

Cleveland, O.; West Centre Sales Company, Lorain avenue and West 29th street; one-story garage, 40x128; $9000.

Cleveland, O.; Franz Warner, Hippodrome annex; eight-story public service garage, 185x200; $1,500,000.

Middletown, O.; Daniel Snyder; two-story public garage and sales room, 50x100; $10,000.

Toledo, O.; Johnson Thurston, 843 Spitzer building; one-story private garage, 50x50; $5000.

Carmen, Okla.; J. H. Curtis Automobile Exchange; automobile sales room, 60x100; $5000. Ford agency.

Oklahoma City, Okla.; Pioneer Telephone Company; one-story garage; $19,000.

Bustleton, Penn.; John Barber; one-story public garage, 48x63; $5000.

Easton, Penn.; Morris Kichm, 697 Northampton street; two-story garage, 63x110; $20,000.

Harrisburg, Penn.; Harold G. Hopple, Harrisburg Bank building; one-story garage, 60x100; $7000.

Latham Park, Penn.; B. C. Steiner; 1½-story garage, 24x35; $8000.

Pittsburg, Penn.; H. C. Mendel Company, 405 Federal street; two-story commercial garage, 50x180.

Rogersford, Penn.; M. A. Freed; one-story garage, 47x72.

Wayne, Penn.; Hale Motor Company; one-story garage, 150x94; $12,000.

Wyomissing, Penn.; Max Mittendorf, Wyomissing building; two-story garage, 35x30; $4000.

Pawtucket, R. I.; Henry L. Murphy; one-story public garage, 50x120 and wing 25x25; $8000.

Liberty, S. C.; B. M. Holland; one-story brick garage, 34x90; $2000.

El Paso, Tex.; Borderland Auto Supply Company; two-story brick garage, 120x52; $30,000.

Houston, Tex.; Leland Automobile Company; one-story sales room and service station, 125 square feet.

Houston, Tex.; O. Lochran, Jr.; one-story garage; $10,000.

San Angelo, Tex.; J. Willis Johnson; one-story brick garage; $7000.

San Angelo, Tex.; Edward D. Miller, Maxwell and Velie automobile distributor; one-story garage; $1000.

Martinsville, Va.; H. A. Ford Motor Company; two-story garage and sales room, 30x102; $2000.

Norfolk, Va.; Garage and Automobile Sales Agency, Plumme and Randolph streets; two-story garage, 39x88.

Richmond, Va.; T. B. Bryan; one-story brick, steel and frame garage; $40,000.

Fairmont, W. Va.; City of Fairmont; one-story private garage, 75x60; $2000.

Milwaukee, Wis.; R. E. Oberst, 355 National avenue; two-story garage and sales room, 120x150; $30,000.

Milwaukee, Wis.; Mary Molitor, 718 Jefferson street; one-story garage, 24x33; $5000.

Racine, Wis.; Johnson Sales Company, 919 Washington avenue; two-story garage and repair shop, 70x75; $10,000.

New Contracts Recently Awarded.

Conway, Ark.; J. M. Courtney; one-story garage, 40x70; for T. R. Douglass. Lessee, E. and O. Douglass.

Hartford, Conn.; J. H. Grozier Company, 721 Main street; one-story garage, 58x81; for Colts Patent Firearms Company; $8000.

Hartford, Conn.; M. Coppelli; one-story garage, 95x60; for S. Kaplan.

Shelton, Conn.; Hession Brothers, Derby, Conn.; three-story garage, 54x72; for John H. Seisabaugh; $10,000.

Torrington, Conn.; Torrington Building Company; two-story commercial garage, 98x105; for William Enules; $25,000.

Wallingford, Conn.; Loucks & Clark; one-story public garage, 49x135; for Edward H. Backes, 199 South Main street; $6000.

Bloomington, Ill.; B. S. Green; one-story garage, 40x50; $6000.

Chicago, Ill.; R. L. Hurlburt, 2711 North avenue; one-story garage and service station, 50x130; $12,000.

Chicago, Ill.; T. C. Schnaffner, 130 N. State street; one-story public garage, 50x125; $8000. Lessee, Eli Lipsictz, 517 W. Madison street.

Oak Park, Ill.; N. S. Munger, 803 South Boulevard; one-story garage, 20x75.

Rockford, Ill.; August Holm, 1604 Fourth avenue; two-story public garage, 66x150; for Rockford-Overland Company;

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Ira L. Bell, manager, 120 N. Court street; $30,000.

Muncie, Ind.; Charles Morrow, 1126 E. Main street; one-story public garage and storage station, 40x100 and wing 40x30; for Edward T. Boyce, 511 Charles street. Lessee of garage, Jones & Zuber, 326 E. Main street.

Cedar Rapids, Ia.; A. J. Smith, 234 Granby building; one-story garage, 73x140; for Dr. C. S. Krause, 204 Security building; $12,000.

Des Moines, Ia.; W. F. Mitchell Company, 1315 Locust street; two-story garage, 66x132; for Sears Automobile Company, 10th and Locust streets; $15,000.

Madisonville, Ky.; W. L. Hale; one-story garage, 30x120; for Robert Crow.

Portland, Me.; Charles B. Dalton; one-story garage and sales room, 86x60; for Edwin T. Dalton, 465 Congress street; $7000.

Baltimore, Md.; Julius Cohn, 616 South Charles street; one-story brick garage, 28x95; at 73-75 West street.

Boston, Mass.; J. H. Broderick, 44 Broomfield street; two-story public garage, 138x138; for Jane L. Webb, 16 Owen street; $60,000.

Lowell, Mass.; Amede Jean; one-story garage, 45x104; for Joseph Morin, 213 Pawtucket street; $5000.

New Bedford, Mass.; O. Robitaille, 200 Collette street; one-story garage, 55x75; for William Thompson, 101 N. Second street; $8000.

New Bedford, Mass.; Napoleon Lapointe, 64 Emma street; one-story garage, 58x99; for Joseph A. Bouvier, 44 Beetle street; $6000.

Worcester, Mass.; James Miles & Son Company, 293 Main street; one-story garage, 56x68; for Charles E. Burnham, Slater building; $9000.

Detroit, Mich.; A. J. Smith Company, 11 Campau building; three-story garage, 100x150; for D. W. Simons, Majestic building; $50,000.

Detroit, Mich.; Joseph Coley; one-story garage, 65x125; for Peter Platt; $18,000.

Duluth, Minn.; N. A. Bergstrom, 114 S. 18th avenue; one-story garage and repair shop, 50x125; for Standard Oil Company, Thomas H. Lang, manager; $10,000.

Laurel, Miss.; B. F. Annis; one-story brick garage, 75x90; cement floor; for Knights of Pythias; $5000.

Kansas City, Mo.; T. L. Davis; one-story garage, 73x180; for G. R. Thompson, 1313 W. 16th street; $3000.

Kansas City, Mo.; E. Fitzpatrick, 2929 Michigan avenue; one-story garage, 26x132; for Margaret Fitzpatrick, 2925 Michigan avenue; $2000.

Kansas City, Mo.; E. L. Winn Construction Company; one-story tapestry brick and cut stone garage, 100x132; for George W. and H. E. Huselton.

St. Louis, Mo.; Reis Auto Repair Co., 6156 Bartmer avenue; one-story repair shop; install equipment; $5000.

Omaha, Neb.; Arthur Smith, 2611 Hamilton street; two-story garage, 44x80; $3000.

Omaha, Neb.; Hugh McCaffrey, 214 Douglas street; one-story garage, 96x112; $10,000.

Burlington, N. J.; George A. Jack; one-story garage, 52x82; $45,000.

Garfield, N. J.; H. Swoop, 253 Burgess place, Passaic, N. J.; one-story garage, 75x100; for Oswald Koinheff, 65 Passaic avenue; $8000.

Paterson, N. J.; Richard L. Clark, 766 E. 27th street; one-story public garage, 50x90; for Martin White, 729 Madison avenue; $5000.

South Salem, N. J.; Barzagh-Vought Company, Inc.; 299 Madison avenue, New York City; two-story garage, 25x65; for George Agnew; $10,000.

Fargo, N. D.; T. F. Powers Company; four-story garage, 50x150; for Fargo Motor Sales Company; $40,000.

Albany, N. Y.; J. J. Finn & Son, 9 Cuyler avenue; one-story garage, 68x40; for John H. Lackle, 848 Livingston avenue; $4000.

Albany, N. Y.; J. B. Waldbilling, 425 First street; one-story garage, 20x50; for Albany County Club; $10,000.

Buffalo, N. Y.; W. A. Walker, 563 W. Utica street; one-story garage, 62x18; $3000.

Great Neck, L. I., N. Y.; Gabler Construction Company, 114 Leroy street, New York City; one-story garage, 50x100; for Great Neck Garage and Repair Company; $8000.

New York, N. Y.; Waverly Construction Company, 63 Park row; two-story garage, 60x80; $25,000.

New York, N. Y.; William S. Temple, 401 W. 149th street; four one-story garages, 21x15; for Charles Adams, 646 W. 158th street; $48,000.

Rochester, N. Y.; Curran & Swartout, Granite building; two-story garage, 55x200; for Eugene Sackett, 75 Exchange avenue; $35,000.

Utica, N. Y.; Salvatore Rizzo, 646 Catherine street; two-story garage, 51x45; for Realty Garage Company; $?500.

Alexander, O.; C. E. McLees, Granville, O.; one-story garage, 45x100; for Taylor Bishop; $6300.

Cincinnati, O.; Edward Winters, 200 E. McMillan street; one-story public garage, 19x80; for W. R. Kirby, 1550 Epworth street; $5000.

Geneva, O.; George Rayne; one-story commercial garage; 82x110; for Walter Cummings; $12,000.

Toledo, O.; Schmidt & Harwood, Builders' Exchange; one-story garage, 29x58; for Kent-Owens Machine Company; F. L. Geddes, secretary, 1401 Nicholas building; $3000.

Youngstown, O.; Heller Brothers Company; two-story garage, 26x84; for Richard Garlick, Stambaugh building; $10,000.

Oklahoma City, Okla.; E. C. Ross, 128½ W. Second street; two-story garage, 50x140; for Edward Seaman, 923 N. Broadway; $14,000.

Tulsa, Okla.; J. J. Harris, 24 South Wheeling street; one-story garage and sales room, 90x140; for J. O. Mitchell, Reeder building.

Chester, Penn.; Francis Moore; one-story public garage, 50x140; for H. Howard and Frederick Bowers; $7000.

Erie, Penn.; Wilkinson & Miller, Marine Bank building; one-story garage, 12x28; for Fred Bauschard, 936 W. Sixth street.

Franklin, Penn.; John Osborn & Son; one-story commercial garage, 50x60; for N. B. Myers; $4000.

Kingston, Penn.; Bonham & Trog; one-story garage, 70x150; for Lowe Brothers, 208 Wyoming avenue; $7000.

Philadelphia, Penn.; J. Shenkman; eight brick garages, each 10x19; south side Olney avenue, east of Fifth street; $2400.

Philadelphia, Penn.; L. Kaplau; brick garage, 21x110; northeast corner Arch and Felton streets; for Mrs. Annie Smith; $8000.

Pittsburg, Penn.; Landau Brothers, 311 Second avenue; two-story commercial garage, 90x70; for Up Town Garage Company; $30,000.

Pittsburg, Penn.; D. T. Riffle, 1402 Keenan building; four-story garage and sales room, 50x130; Schenley Farms Company, 201 Renyson street; $80,000.

Memphis, Tenn.; C. D. Wailes; one-story garage at 883 Poplar street; $3000.

Mountain City, Tenn.; W. R. Stoffel; one-story brick garage, 33.6x60; concrete floor; $2000.

Plainview, Tex.; Harrison & Kerr; one-story brick garage and storage station; for Hupp Motor Sales Company; $8000.

Wynne, Tex.; O. C. Beamon; one-story brick garage and sales room, 60x120; gravel roof, concrete floor, electric lighting; for David Block; $6500.

Charlottesville, Va.; E. H. Parrish & Co.; two-story garage, 41x85; for S. Briggs Electric Company; $11,000.

Norfolk, Va.; A. F. Smith; one-story garage, 50x120; for North Granby Realty Corporation; $12,000.

La Crosse, Wis.; Harry Dahl, agent for Ford cars; two-story garage and repair shop; 60x145; $20,000.

Stevens Point, Wis.; B. V. Martin; one-story garage and sales room, 45x125; for G. A. Gulickson; $7000.

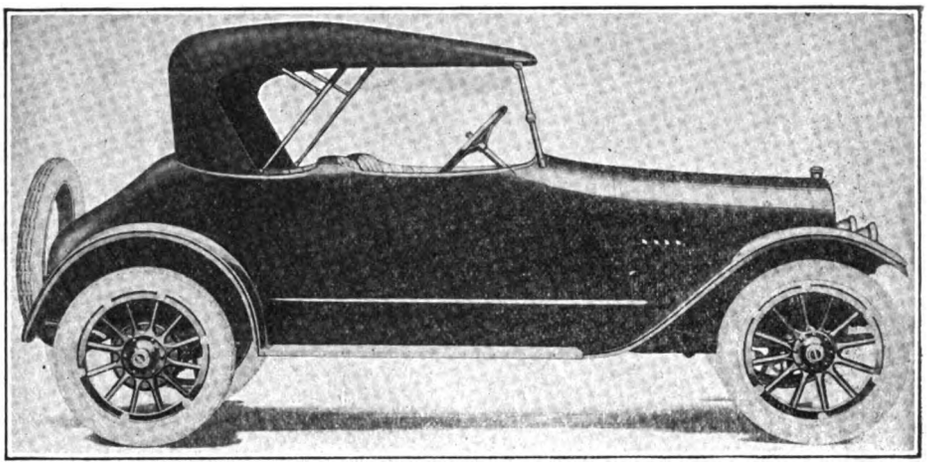
West Bend, Wis.; West Bend Motor Company; two-story public garage, 50x80; $8000.

Delano, Cal.; The Ford Garage has purchased the Highway Garage from L. V. Lewis.

Alliance, Neb.; The Rumer Motor Company has moved to 116 Box Butte avenue. The garage is being remodeled and painted and a Crow-Elkhart service station will be maintained.

St. Henry, O.; Henry Weiskittle has purchased the garage business of Barker & Coate and has taken possession.

Paterson Four-Cylinder Roadster



The Paterson four-cylinder Close Coupled, Chummy Four-Passenger Roadster; made by the W. A. Paterson Co., Flint, Mich.; price, $1095—Agencies are now being chosen. Described in Automobile Journal, Jan. 10, 1917.

Engine, L head, block.
Bore and stroke, 3¼x4½.
Horsepower (S. A. E.), 25.35.
Lubrication, splash pressure.
Carburetor, Stromberg.
Fuel feed, gravity.
Ignition, Delco.
Starting and lighting, Delco.
Cooling, by pump.
Clutch, cone.
Gearset, 3 speed, unit engine.
Rear axle, full floating.
Wheelbase, 117 inches.
Tire sizes, 32 by 4.

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AGENCIES RECENTLY APPOINTED.

Add to and Correct Your Mailing List—Symbol * Indicates Commercial Vehicle, † Electric, and ‡ Agricultural Tractors.

ALABAMA.

Birmingham—*Redden, A. H. Abel Wagon Co.

ARKANSAS.

Hot Springs—Detroiter, F. P. Walker.
Pine Bluff—Chevrolet, The Laser Motor Co.

CALIFORNIA.

Bakersfield—King, William & Kaar.
Hollywood—King, E. A. Green.
Long Beach—King, E. A. Green.
Los Angeles—Detroiter, Detroiter Los Angeles Co.
Metz, F. C. Rockwell.
Oakland—Ford, O. F. Smith, East 14th St.
Pasadena—King, T. H. Potter, 85 W. Colorado St.
Riverside—King, Starrett Motor Car Co.
San Pedro—Velie, The Sollee Garage.

CONNECTICUT.

Derby—Oldsmobile, Derby Auto Co.
Meriden—Pullman, G. A. Lentz, High School Ave. and Church St.
New Haven—*Koehler, Atwood Auto Agency.

COLORADO.

Burlington—*Aurora, The City Garage, 220 16th St.
Denver—Apperson, The Molman-Mulconnery, 1313 Broadway.
Crow-Elkhart, The Merrick Motor Co., 1551 Broadway.
Jordan, The Harrison Motor Co., 1170 Broadway.
Liberty, The Harrison Motor Co., 1170 Broadway.
*Service, the Colorado Motor Truck and Service Co., 1726 Glenam place.
*Stewart, Woods Premier Co.
Ft. Morgan—Oldsmobile, J. A. Croft.
Greeley—*Aurora, The Chandler Agency and Service Co.
Kalispell—*Federal, The Kolle Garage.
Lamar—*Aurora, The Lamar Hardware Co.
Longmont—*Aurora, V. S. Allen.
Loveland—*Aurora, Klungenberg & McMurtrie.

DELAWARE.

Wilmington—Apperson, The Central Garage.
Lexington, H. A. Oberender.
*International, White Brothers.

FLORIDA.

Deland—*Koehler, Triangle Garage.
Tampa—Oldsmobile, Hison Warder Co., 1503 Franklin St.

GEORGIA.

Eatonton—Oldsmobile, Edmonson & Son.

ILLINOIS.

Chicago—Madison, The Combs Co.
Madison, J. Rochford.
Chicago Heights—Madison, A. Kasdorf.
Christopher—Dodge, J. C. Swan.
Maxwell, J. C. Swan.
East St. Louis—Oldsmobile, Byerly Automobile Co.
Marion—Haynes, The Motor Sales Co.
Momence—Overland, A. F. Caldwell, Chipman building.
Oak Park—Metz, James Haddie, 729 Lyman Ave.
Ottawa—Jeffery, Burns & Moore, Gay building.
Velie, Burns & Moore, Gay building.

INDIANA.

Hammond—Oldsmobile, Bunnell Auto Sales Co.
Indianapolis—Fostoria, J. T. Diver.
Madison, E. L. Baker.
Madison, Fred P. O'Brien.
Saxon, Barkley-Wonser Saxon Co., 924 Pennsylvania St.
States, J. T. Diver.
Wolverline, J. T. Diver.
*Denby, J. T. Diver.
*Fostoria, J. T. Diver.
Mt. Vernon—King, John Derrington.
South Bend—Woods Dual Power, The Franklin Car Co., 308 La Salle Ave.

IOWA.

Luverne—Chalmers, Charles Notestine.
Dodge, Charles Notestine.
Ford, Charles Notestine.
Iowa City—Cole Eight, The Beekman Motor Car Co.

KANSAS.

Ford—Oldsmobile, J. J. Anderson.
Kiowa—Oldsmobile, D. M. Circle.
Olathe—Oldsmobile, E. P. Hatefield.
Pratt—Oldsmobile, E. P. Sanders.
Stockton—Oldsmobile, Griffin & Beckley.

LOUISIANA.

New Orleans—Jordan, J. Le Blanc, Jr., 853 Carondelet St.
‡Troy, The O'Rourke-Muller Motor Co.
Shreveport—Chalmers, The Southern Motor Car and Accessory Co.

MAINE.

Bangor—Oldsmobile, Eastern Builders Association.
Farmington—Oakland Six, F. E. McLeary.

MARYLAND.

Baltimore—Bour-Davis, The Star Sales Co., 228 S. Broadway.
Grant, The Star Sales Co., 228 S. Broadway.
*Indiana, The Wiseman-Downs Co., 34 East Pratt St.
Brooklyn—King, Brooklyn Garage.
Farmington—Oakland, F. E. McLeary.
Perryman—King, Kuldwell Brothers.

MASSACHUSETTS.

Boston—*Altas, Fred O. Henderson.
*Signal, Fred O. Henderson.

MICHIGAN.

Ann Arbor—Oldsmobile, W. E. DeFries.
Battle Creek—Dort, J. F. Carnes & Son.
Birmingham—Dodge, William Hunt.
Charlotte—King, J. A. Dritz.
Cheboygan—Maxwell, Carl Johns.
Reo, Carl Johns.
Corunna—Elgin, Fred Krils.
Detroit—Biddle, R. S. Merriam.
Detroit, R. S. Merriam.
Mercer, R. S. Merriam.
Olympian, Olympian Motor Sales Co.
Princess, The Henry L. Walker Co.,
Flint—Oldsmobile, Hurd Auto Sales Co.
Grand Rapids—Hackett, Samuel Weir.
Ionia—Oldsmobile, Ionia Auto Sales Co.
Marinette—King, Auto Supply Co.
Muskegon—Oldsmobile, J. T. Roebuck.
Northville—Oldsmobile, F. S. Neal.
Parma—Jackson, Zantop Brothers.
Port Huron—Oldsmobile, George Yokom.
Reed City—Oldsmobile, S. T. Johnson.
Saginaw—Kissel, Coleman-Frank Co., 426 South Washington Ave.
Saxon, Coleman-Frank Co., 426 South Washington Ave.
St. Clair—*Briscoe, The St. Clair County Sales Co.
*Denby, The St. Clair County Sales Co.
Sturgis—King, George J. Stuart.
Tecumseh—Oldsmobile, Tecumseh Garage.

MONTANA.

Alzada—Dodge, Ami Zimmerman.
Kalispell—*Velie, The Kalispell Harness and Saddlery Co.

MISSISSIPPI.

Clarksdale—Oldsmobile, J. H. Stuart.

MISSOURI.

Hemple—Oldsmobile, B. A. Boyer.
Mexico—Oldsmobile, Fred W. Pitcher.

NEBRASKA.

Creighton—Maxwell, E. A. Roamer.
Holdredge—Marion Handley, Nels Kronquest and F. C. Lancaster.
Hooper—King, Dan & Ewald.
Humbolt—Oldsmobile, M. W. Harding.
Omaha—*G. M. C., The Nebraska Buck Auto Co.

NEW YORK.

Amsterdam—*Koehler, West End Garage.
Brooklyn—*Burford, The Z. & W. Motor Co., Inc., 220 Clifton place.
*Koehler, The Z. & W. Motor Co., Inc., 220 Clifton place.
Buffalo—King, Hallstead Messersmith Co., 310 Michigan Ave.
New York—Hal, The Jennings Motor Sales Corp., 1891 Broadway.
*Koehler, Economy Motor Truck Co.
Schenectady—*Koehler, W. H. Earl, 412 McClellan St.

NORTH CAROLINA.

St. Paul—Oldsmobile, A. R. McEachern.

NORTH DAKOTA.

Bismarck—Madison, The Western Auto Sales Co.

OHIO.

Canton—*Garford, The Canton Motor Car Co., Cleveland and Fifth St., N. W.
Cincinnati—*Koehler, Istholhoff & Braukmann.
Columbus—Stephens Six, The Ohio Moline Plow Co., Front and Naghten Sts.
Greenfield—Madison, J. W. Orr.
Toledo—*Koehler, Brunnell, Auto Sales Co., 1414 Madison Ave.

OKLAHOMA.

Bartlesville—*Koehler, A. R. McKnight, 199 E. Second St.
Muskogee—Velie, The Chapman Garage.

OREGON.

Portland—Dodge, A. L. Sollender, 369 Hawthorne Ave.
Saxon, A. L. Sollender, 369 Hawthorne Ave.

PENNSYLVANIA.

Ambler—Oldsmobile, L. D. Myers.
Edensburg—Reo, Brown Auto Co.
Foylestown—Oldsmobile, G. B. McLaughlin.
McKees Rock—*Koehler, Berthoble Motor Car Co.
Morristown—Oldsmobile, Keystone Auto Supply Co.
Perkasie—Oldsmobile, Frank Kramer.
Philadelphia—Inter-State, G. L. Derricksson.
*Maxfer, The McCurdy-Branard Co.
Pottstown—Oldsmobile, Calvin Harp.
Schwenkville—Oldsmobile, Bromer-Tallis, Simpler Co.

RHODE ISLAND.

Providence—Owen Magnetic, W. H. Nowell.

SOUTH CAROLINA.

Sumter—King, Carolina Machinery Co.

SOUTH DAKOTA.

Bridgewater—Oldsmobile, E. Bollinger.
Canova—Oldsmobile, S. H. Butler.
Carthage—Oldsmobile, Conkey & Pawlson.
Chancellor—Oldsmobile, F. H. Meier.
Geddes—Oldsmobile, B. M. Richardson.
Howard—Oldsmobile, J. T. Johnson.
Marion Junction—Oldsmobile, A. E. Hofer.
Parker—Oldsmobile, Mabee Auto Co.
Trent—Oldsmobile, Amidahl Brothers.

TENNESSEE.

Memphis—Cadillac, The Cadillac-Stout Co.
Chevrolet, The Burke-Court Co., 236-238 Monroe Ave.
Crow-Elkhart, The Dixie Motor Sales Co.

TEXAS.

Beaumont—Oldsmobile, Beaumont Motor Car Co.
Dallas—Regal, The J. H. Sides.
*Commerce, The Padgett Brothers Co.
*Keeley, The Padgett Brothers Co.
Houston—Premier, The Austin Motor Car Co.
‡Troy, The Barden Electric & Mch. Co.
Lubbock—Chevrolet, The Lubbock Auto Sales Co.
Lufkin—Oldsmobile, C. H. Hanell.
Matador—Oldsmobile, Willw & McGahren.
Mt. Pleasant—Oldsmobile, A. H. O'Tyson.
Ochiltree—Oldsmobile, Forbes Bros.
Orange—Oldsmobile, J. T. Blackmarr.
Reagan—King, Dr. H. P. Cutry.
Taylor—Oldsmobile, C. H. Cooke.
Waco—Oldsmobile, McLendon Hdw. Co.

VERMONT.

Middlesbury—Oldsmobile, James R. Cartmell.

VIRGINIA.

Richmond—Jordan, The Plageman.

WISCONSIN.

Berlin—Maxwell, F. L. Trickey.
Columbus—Oldsmobile, R. A. Shepard.
Eau Clare—Reo, The Tanberg Auto Co.
Marietta—Oldsmobile, Auto Supply Co.
Milwaukee—Chevrolet, James F. Hefferman, 11th and Grenfield Aves.
Reedsburg—Oldsmobile, Geo. A. Darrow.
Richland Centre—Oldsmobile, R. C. McMullen.

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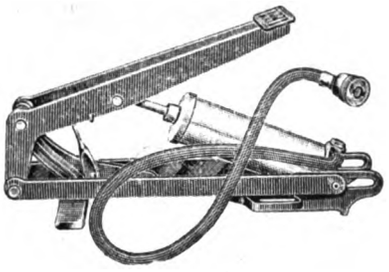
PETELER FOOT TIRE PUMP.

As its name implies, the Peteler Foot Tire Pump is designed to be operated by a person's foot, the action being somewhat similar to that of walking and practically just as easy. There is no strain on the back or arms, as when operating the hand pump type, and one is able to bring a greater pressure to bear through placing the weight of the body on the pedal. The pump is an ingenious and compact construction and practically indestructible in any service. It is small enough to be carried about in the car and large enough to be used to inflate the largest of tires. It is finished in baked-on black enamel with nickel trim. The maker will supply complete details of construction if they are desired.

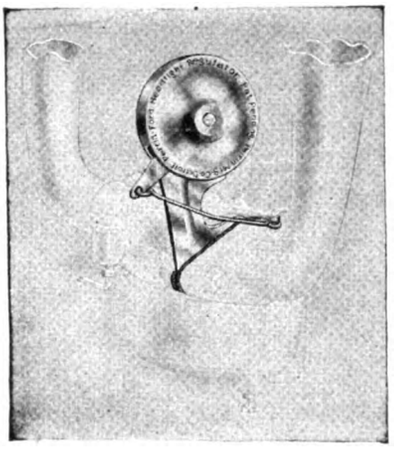
Marketed by Moreau & Pratt, Inc., 1834 Broadway, New York, N. Y. Retail price, $5.



Peteler Foot Tire Pump.

FORD HEADLIGHT REGULATOR.

The Perrin Ford Headlight Regulator will interest owners of Ford cars equipped with electric systems installed at the Ford factory. In this system the lighting current is taken from the magneto, and at speeds of 10 miles or over the supply is adequate. But under that speed, when light is needed for rough roads and turning corners, etc., the light becomes quite dim. The Perrin regulator is designed to overcome this trouble, concentrating all the available current in the right hand lamp at low speeds, and without slowing down the engine. When higher speeds are attained the other lamp takes its normal share of the current automatically. The regulator can be installed by any owner and in very short time; the only tool needed is a monkey wrench. Installation requires no change in the car's wiring nor the boring of holes in metal or wood.



Perrin Headlight Regulator.

Made by the Perrin Mfg. Co., Detroit, Mich., and for retail sale at $1 each.

AUTO HEEL REST FOR FORDS.

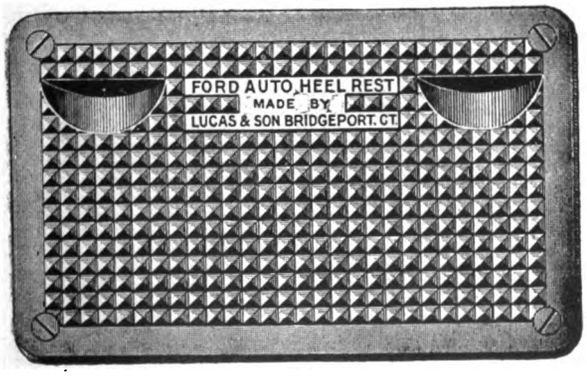
This is a simple device intended to relieve the driver of the strain that customarily results from holding the foot on the clutch and brake pedals for any length of time. It is made of frosted aluminum with a ⅜-inch polished band. Furthermore, such a device protects the rubber mat on the driver's compartment of a Ford car from being quickly worn out by pressure and friction of a shoe heel. The pyramids and raised letters on the rests are cast solid and will not flatten or wear through, nor rust or tarnish. The rests are made ½, 1, 1½ and 2 inches high and are supplied for all makes of cars.

Made by J. L. Lucas & Son, Bridgeport, Conn. Sold at retail at $1 each. Dealers will be interested in the maker's selling proposition.

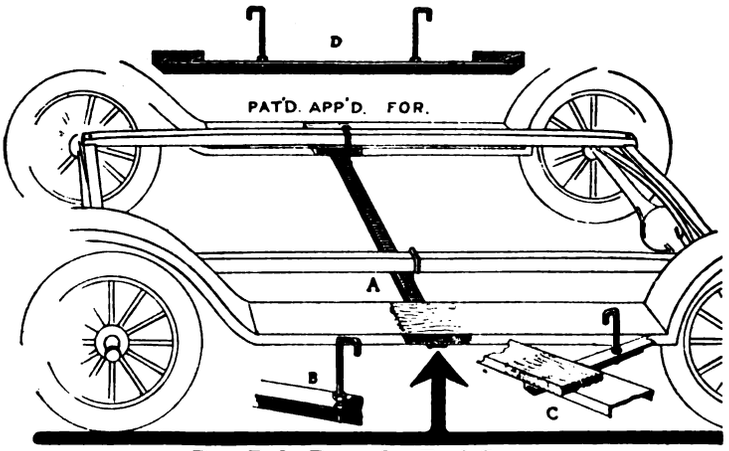
DOW BODY BRACE FOR FORDS.

The Dow Body brace for Ford cars is designed to stiffen the body and give rigid support to the running boards, preventing the latter from giving and working loose from constant use. It is made of a strong steel angle brace, which is secured to the frame midway between the axles with board sections at the ends, which fit in the channels of the running boards. The weight complete is 12 pounds.

Made by the Dow Wire and Iron Works, Louisville, Ky. Retail price, $2.50.



Lucas Heel Rest.



Dow Body Brace for Ford Cars.

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GRACE PNEUMATIC CONTROLLER.

A device which functionizes as a gasoline economizer, decarbonizer, primer, air brake and carburetor controller has been placed on the market under the name of the "Grace Pneumatic Controller."

The device has no moving parts, consisting of a small flexible tube leading from the steering post or dash to an enlarged pipe section placed on the manifold or the hottest part of the engine. From the opposite end of this larger section another piece of tubing is connected with and enters the manifold just above the carburetor. The warm flow of air sucked through the tube assists carburetion, or the tube may be used as a means of introducing a priming charge to the motor, the fuel being gasified after passing through the hot drum. Decarbonizing liquid may be introduced in the same way and when the engine is shut off on a down grade the air valve may be opened wide and the cool air admitted to the combustion chambers. It also serves as a brake and prevents the lubricating oil from being drawn up past the piston rings.

Made by Grace & Co., 3205 West Washington street, Los Angeles, Cal. Retail price, $10.

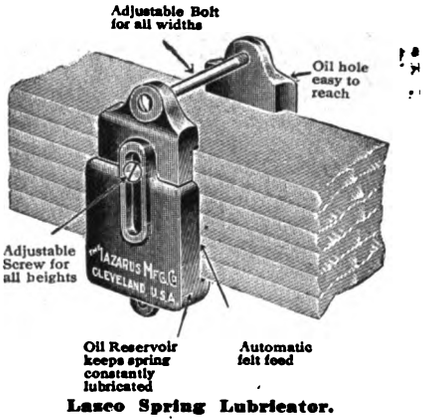
Grace Gasoline Economiser.

LAZCO SPRING LUBRICATOR.

The value of good spring lubrication is acknowledged by all manufacturers and experienced users of motor cars. Constant lubrication between the leaves of the springs eliminates the friction, prevents rust and lessens the tendency of the springs to crystalize.

The Lazco adjustable spring lubricator is a device which clamps on to the central section of the spring member. It contains a reservoir for the lubricant and felt pad through which the lubricant is fed automatically between the springs. It is adjustable both as to the height of the spring and width, fitting all spring sizes from the Ford to those used on the largest trucks.

Made by the Lazarus Mfg. Co., 750 Prospect Ave., Cleveland, O. Retail price, 50 cents each.

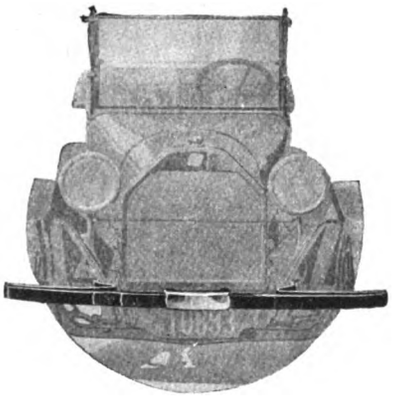


Lazco Spring Lubricator.

HARTFORD BUMP ABSORBER.

In describing the Hartford Bump Absorber the maker states "it is more than a mere bumper; it is bump and shock absorbing." A bumper is shown in the accompanying illustration mounted on the front of a car. It consists of two powerful and unbreakable loops of spring steel bolted onto the frame, it fitting any size and type of vehicle. The loops are resilient and give before the blow instead of being rigid, and they extend beyond the wheels on both sides, affording protection to those members. It is not necessary to bore or drill holes to install the bumper.

Made by the Edward V. Hartford, Inc., formerly the Hartford Suspension Co., 147 Morgan St., Jersey City, N. J. Write for prices.



Hartford Bump Absorber.

MINUTE DEMOUNTABLE WHEEL.

The Minute Demountable Wheel is, as its name implies, designed to afford instant change of Ford wheels on the road when tire troubles develop, obviating the necessity of struggling with the tire. The wheel is taken off by simply unscrewing one nut, and it can be replaced just as easily, the maker claiming either operation can be done in 60 seconds. The Minute Wheel equipment requires that the four special hubs sold with the wheel be fitted upon the regular Ford hubs, which gives increased strength to the assembly. The Ford wheels are used and the flange part of the new hubs is bolted to this with its powerful driving lug bolts. The two units lock together with the exactness and more than the strength of one piece. As the nut goes on with a left hand thread, it is impossible for it to come off, even though the locking plate, which is provided, should not be used.

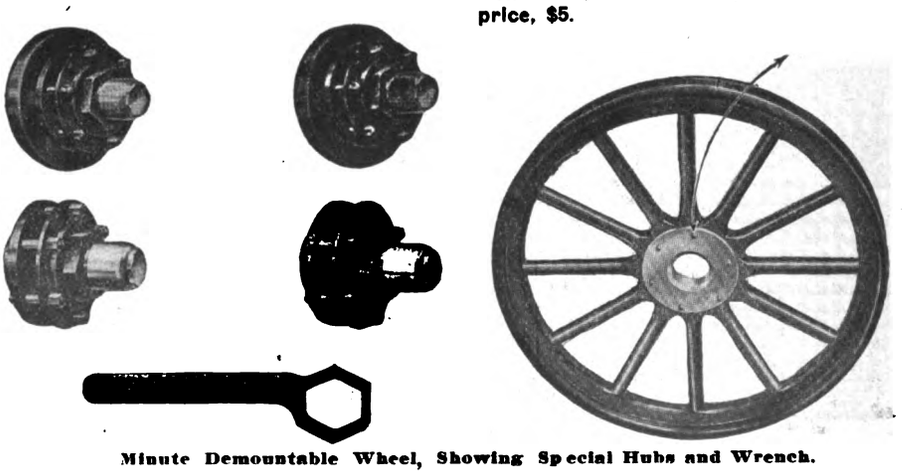
Made by the Hill-Smith Metal Goods Co., 88 Pearl St., Boston, Mass. Retail price for complete equipment for four wheels, $30.

THERMO ELECTRIC PRIMER.

The Thermo electric gas primer is a device that screws into the inlet manifold and delivers heated gasoline vapor and boiling hot liquid gasoline to all cylinders to facilitate starting action even on the coldest day.

It is formed of a brass chamber, around which is wound a heating unit connected through a switch to the battery wire. When the electric connection is made the chamber becomes heated to a temperature of 300 to 500 degrees in about a minute. When the starter pedal is depressed a needle valve is opened and the vacuum in manifold sucks gasoline into the chamber independent of the carburetor action. This charge being highly heated, it gives off a highly explosive gas. The action is automatic when the switch is turned on and the needle valve rod is turned, and it does not require any hand pumping or filling. The tubing and wire for making the connections are furnished with the primer.

Made by New York Coil Co., 338-340 Pearl St., New York, N. Y. Retail price, $5.



Minute Demountable Wheel, Showing Special Hubs and Wrench.

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MASTER CALORITE PLUGS.

In the 1917 models of the Master Calorite Spark Plugs, the already heavy calorite insulator has been greatly increased in size to increase their strength and prevent breakage from side blows resulting from sharp contact with wrenches or other tools being used around the engine.

Calorite insulators will withstand enormous strains resulting from sudden temperature changes and are tested by being heated white hot in a gasoline blow torch and then plunged into cold water. This is a far more severe test than the plugs are subjected to in actual use, but it can be repeated many times on calorite plugs without causing any sign of a fracture.

Made by Hartford Machine Screw Co., Hartford, Conn. Prices sent on application.

Master Calorite Spark Plug.

I-H Half Sole Tire.

"I-H" RUBBER HALF-SOLES.

A new non-skid model of the "Half-Sole" tire is being placed on the market. It is similar to the smooth tread design with three to five plies of extra strong tire fabric solidly vulcanized together under several thousand pounds pressure. The cushion, which is in the centre of the tread next to the fabric carcass, is a thick ply of very elastic rubber, which serves to attach the rubber tread firmly to the carcass. The conventional breaker strip forms the next layer and supports the tread, which consists of nearly a half inch of unusually tough rubber moulded into a "I-H" design. These Half-Soles are made to go over any tire, old or new, and the maker claims that their use will double or treble the mileage. They carry a guarantee against puncture.

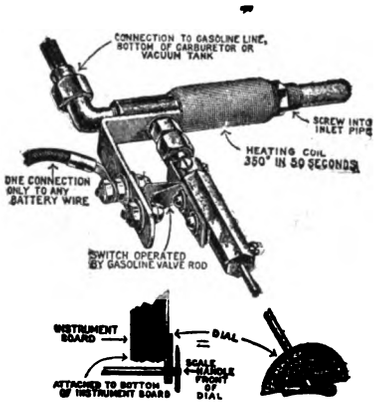
Made by the International Rubber Co., Denver, Col. Write for prices.

LETTS MANIFOLD HEATER.

This device is intended to counteract the poor qualities of low grade fuel and to increase the mileage obtainable from it. In fact, it is guaranteed to afford an increase of from 20 to 40 per cent. per gallon. It differs from other types in that it is a two-unit type, instead of being cast integral with the manifold intake upon which it acts. It takes its heat from the exhaust and breaks up the globules of gasoline into a thorough vapor, making for instant combustion and minimum carbonization. A feature of the device is that it is in two parts, which makes it easy to attach or detach and gives the owner opportunity to clean it out at necessary periods without difficulty. The cleaning feature is valuable, because, due to the nature of manifold heater castings, carbon collects on the walls and interferes with carburetion. The maker advises that the device is equally serviceable in warm or hot climates, where considerable trouble frequently arises through the water in the radiator boiling. The Letts device maintains regular and quick firing and in that way insures a comparative and desirable coolness in the power plant.

Made by the Hill-Smith Metal Goods Co., 88 Pearl street, Boston, Mass. Retail price, $6.

Letts Manifold Heater, Showing It Open for Cleaning.



Thermo Electric Primer.

BO-HART SWITCH LOCK.

The Bo-Hart switch lock is applied to the face plate of a switch to control the mechanism in cases where the locking bar is operated by an ordinary tanged-key. It embodies a three tumbler Yale barrel, provided with a small gear transmission to inter-connect the barrel with the regular locking bar of the switch. The tanged-key for operating the locking bar is at all times within its recess and consequently it is impossible to shift the Yale barrel without shifting the locking bar. It is only possible to throw the locking bar by means of a Yale key. The key can be removed only when in locked position.

Manufactured by the Bo-Hart Auto and Machine Company, Lancaster, N. Y. Retail price, $4.

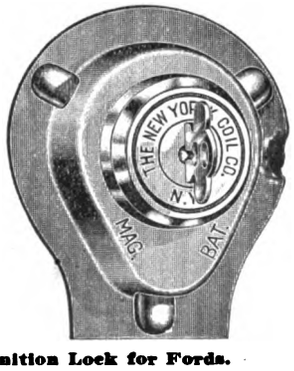
IGNITION LOCK FOR FORDS.

The New York ignition switch lock for Ford cars is a non-pickable barrel lock built into a steel nickeled housing and of very compact construction. It is easily installed by removing the three screws which hold the name plate on the regular Ford switch and screwing the ignition lock in place. Less than five minutes are required to install it.

A three-lobed cam inside the switch forces outward three sliding members, which conceal and protect the retaining screws. They remain over the screws after the first operation of the switch and do not slide each time the key is turned. The key can only be removed when the switch is on the "off" position, when the cam prevents the lugs from being forced inwards.

Made by the New York Coil Co., 338 Pearl St., New York, N. Y. Retail price, $3.

Bo-Hart Switch Lock.



Ignition Lock for Fords.

The "Quieterion," the monthly publication of the Hyatt Roller Bearing Company, made its initial appearance last month. The book has a catchy title, which suggests the new slogan of the Hyatt company, "Quietness." From cover to cover the little booklet is filled with interesting and entertaining reading.

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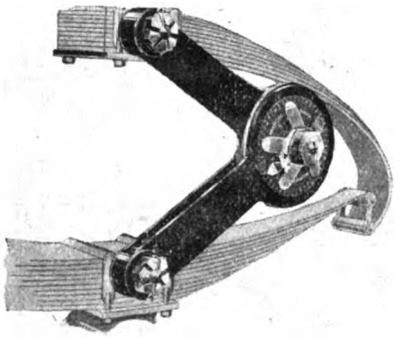
HARTFORD SHOCK ABSORBER.

One of the features of the Hartford exhibit at the New York show was the demonstrations of the Hartford shock absorbers to prove that they absorb all road shocks, prevent side sway, vibration and jolting, eliminate the possibility of spring breakage and insure longer life for the car and its equipment, not to mention the increased comfort to passengers. These absorbers, which are made in six sizes, from the kind for the lightest of cars to the heaviest, are of the well known racing type that has been standard equipment on all speedway racing cars during the past season. Each Hartford set, consisting of four absorbers, is complete and ready to attach when received, and they are accompanied by detailed instructions for the work of installation. They are sold under the standard Hartford guarantee, which reads: "Money back if not satisfactory."

The manufacturer has planned an unusually wide and thorough going advertising campaign for 1917, which will result in benefit to those who handle his products.

Made by the Edward V. Hartford, Inc., formerly the Hartford Suspension Co., 147 Morgan street, Jersey City, N. J. Write for prices.



Hartford Shock Absorber.

LAURENT-CHERRY PULLEY BLOCK.

The principle upon which the Laurent-Cherry Pulley Blocks are operated is similar to that employed in a capstan on board a ship, and the maker declares that because of this principle one man can pull or hoist with a Laurent-Cherry Pulley Block as much as five men could with triple blocks. They are designed for a variety of purposes and are especially valuable equipment for hoisting engines, cars and the like, as well as for pulling motor cars out of deep mud when stuck on the road. There are several sizes made, from the kind designed for the heaviest of industrial work to the "Baby" size that is especially adaptable for carrying around in the car to pull the machine out of mud holes.

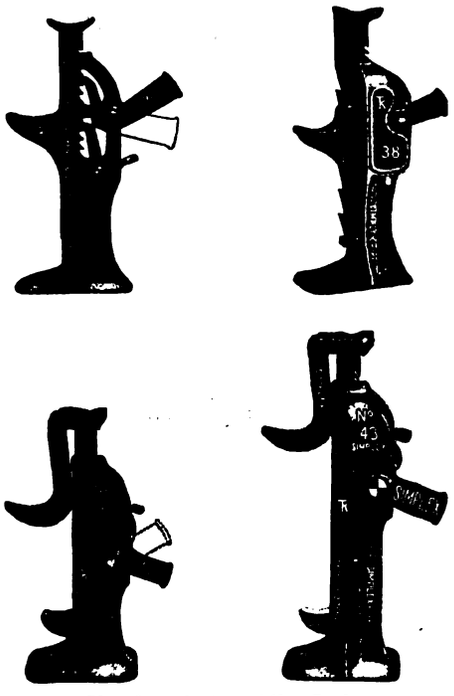
Made by the Laurent-Cherry Pulley Block Co., Trenton, N. J. Write for catalogue and prices.

Laurent-Cherry Pulley Block.

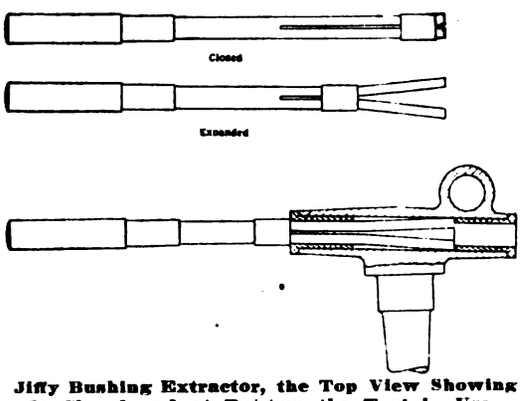
SAFETY STEERING DEVICE.

The Safety Steering Gear Attachment for Ford cars is designed to prevent the steering wheel from passing centre when turned too far. It consists of a two-section clamp that is installed on the steering gear shaft directly above the steering gear bracket and turns with the shaft. It is adjusted and clamped into position when the steering wheel is turned full to the left, in which position it forms a stop on the bracket and insures against the wheel being turned too far.

Made by the New York Coil Co., 338 Pearl St., New York, N. Y. Price, $1.



Simplex Automobile Jacks.



Jiffy Bushing Extractor, the Top View Showing It Closed and at Bottom the Tool in Use.

JIFFY BUSHING EXTRACTOR.

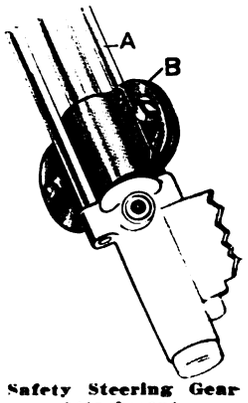
The Jiffy Bushing Extractor for Ford cars is designed to facilitate the removal of bushings from Ford steering knuckles, steering spindle arms or spring bushings, and makes valuable equipment for the owner who works on his car himself or for garage and professional repair men. As shown in accompanying sketch the tool has two spring legs, which when introducing the tool into the bushing are held together by a collar. As the extractor enters deeper into the bushing the collar is held back by the outer end of the bushing and the legs spring apart until they are at full width and seated against the inner end of the bushing. Then a few sharp blows with a mallet will drive the bushing out. The work is done so quickly and easily the maker has named the tool the "Jiffy" to indicate the speed of operation. With this tool it is not necessary to remove a wheel when extracting steering knuckle bushings.

Made by the G. H. Dyer Co., 155 Brookline St., Cambridge, Mass. Retail price, $1.25 each.

SIMPLEX AUTOMOBILE JACKS.

Simplex automobile, industrial and railroad jacks have been on the market for a number of years and are widely used in those fields. Four types for motor car work are illustrated herewith, Nos. 36 and 38 being single acting jacks, operating on the downward stroke, and the other two, Nos. 41 and 43, are double acting. Aside from their unusually rugged construction, the outstanding feature of the Nos. 36 and 38 jacks is the middle adjustable shoe, which allows the jack to be used in several difficult positions. The other two jacks have adjustable and detachable shoes that set snugly into the cap, swing in an arc of 180 degrees and are available in every position. This shoe is especially valuable when jacking at an angle or lifting the entire rear end of a car on a crowned road. All Simplex jacks are black japaned and baked, and the complete line is described in a handsomely illustrated catalogue sent free by the maker.

Manufactured by the Templeton, Kenly & Co., 1020 South Central Ave., Chicago, Ill. Write for catalogue and prices.



Safety Steering Gear Attachment.

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D. O. Black, Jr., Secretary
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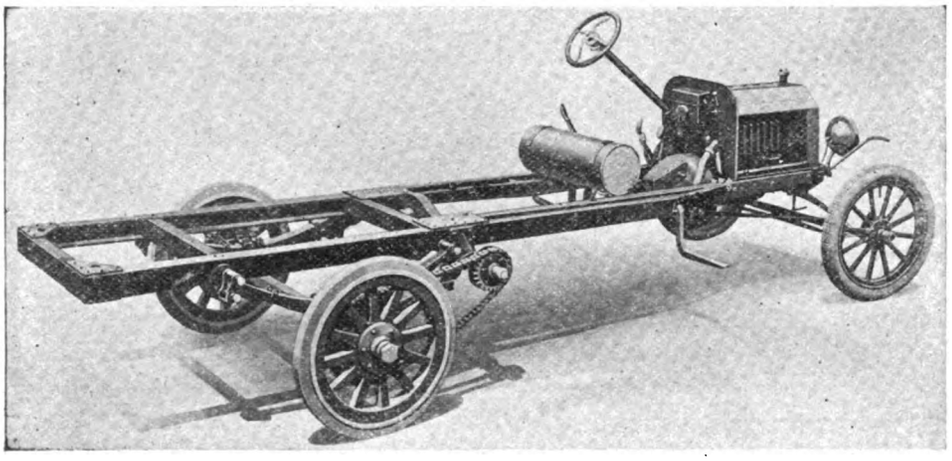


The Tonford Truck Conversion Unit Attached to a Pleasure Car Chassis, Making Its Freight Carrying Capacity 2000 Pounds.

The Tonford Conversion Unit

Description of a Construction For Converting a Pleasure Car Chassis Into a Light Truck

THE sale of attachments for forming light delivery trucks out of pleasure cars chassis has been conducted on such an enormous scale that it virtually is a new and distinct industry. Although the idea is less than three years old, it has been demonstrated as not only practical, but economical, and will to a large extent solve the problem of the disposal of second hand cars, as in case the power plants are still in good working condition, they may be converted into serviceable haulage vehicles and operated at a very low cost.

The Detroit Truck Co., Detroit, Mich., has developed in its Tonford a practical attachment which, in combination with a Ford chassis, makes a light truck with a capacity of one ton, as the name suggests. This unit is a skeleton chassis with a heavy rear axle swung on semi-elliptic springs designed to carry the designated load.

The frame is of channel steel, and fits over the frame of the Ford. It has brackets which support the rear axles of the Ford, and sprockets are attached in place of the rear wheels, the drive being by chain to the heavy truck wheels of the unit, the axle of the pleasure car chassis serving as a jackshaft.

The whole process of attachment is simple and can be accomplished in a few minutes. The assembly is completed with the drilling of four holes for bolts and the attachment of the braking connections, making a conventional one-ton truck construction in the rear, where the weight and strain comes.

The Tonford frame is constructed of two sides, a rear end and two cross members of heavy pressed steel channel section with wide webs. The side members are curved inward at the forward ends and slide onto the frame of the Ford chassis up to the dash and serve to reinforce the latter. The cross members of the frame are joined to the sides at the spring hanger junctures and serve to reinforce the same. The end member and forward cross member are reinforced with heavy gusset plates, those at the forward member also serving to support and hold in place the end of the Ford frame, which is cambered.

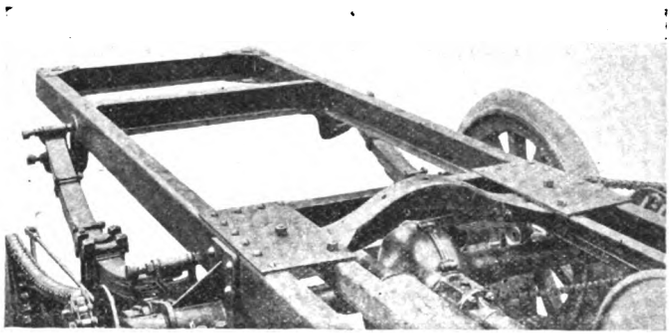
This construction gives the converted truck a double frame from the jackshaft forward and makes for rigidity and strength. The sprockets are keyed onto the rear axle of the Ford chassis and are held with lock nuts. The housing ends are clamped in brackets rigidly bolted to the side members of the unit frame. The drive is through radius rods, which are pivoted to the jackshaft, giving universal action, and are set on rotable seats at the rear end on the rear axle.

The control of the Ford machine is unchanged, the foot brake operating the brakes, which are retained on the rear axle of the chassis, and the emergency lever being connected up with large internal expanding brake shoes fitted to the rear wheels. Standard type block and roller chains are used, as in the conventional chain drive type of truck.

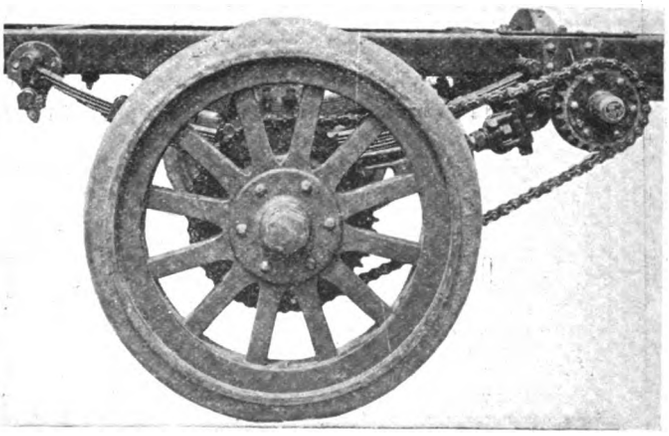
When the unit has been attached to the Ford chassis, the converted vehicle has a wheelbase of 127 inches, which is 27 inches longer than the wheelbase of the standard Ford chassis. The rear tread may be either 56 or 64 inches. The rear wheels of the unit are 12-spoked wooden artillery type with Bower roller bearings, and are fitted with solid tires.

A wide factor of safety is provided by the springs, which are designed to carry a load of 7500 pounds, although the unit is intended to carry 90 per cent. of the total load, or 1800 pounds, of the specified capacity of 2000 pounds. The rear axle, which is 2⅛ inches square, is a steel drop forging and is guaranteed to carry 3000 pounds under all operating conditions.

In preparing the Ford for conversion into a one-ton truck with the Tonford Unit, the body should be removed first, after which the rear axle is jacked up and the rear spring, wheels and fenders removed. After the brake rods are loosened at both ends and taken out of the supports or guides, the chassis is ready to be telescoped into the frame of the truck unit.



Rear End of a Chassis Converted with a Tonford Unit, Showing the Attachment of the Ford Car Frame.



The Heavy Wheel, Chains, Driving Sprockets, Radius Rods and Spring Suspension of the Tonford Unit.

UNITED MOTORS BUYS PATENTS.

The United Motors Co. has bought the patents covering the radiator damper used on Hudson and Columbia cars and owned by the Detroit Motor Appliance Co., which, under the terms of the sale, reserves the right to continue to manufacture a damper for Ford cars.

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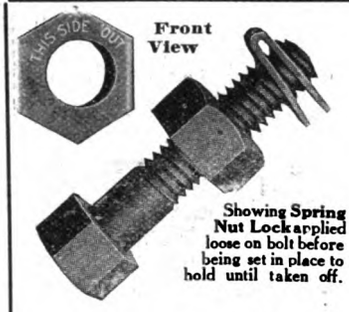

Showing Spring Nut Lock applied loose on bolt before being set in place to hold until taken off.

Why Not Be Sure

that every part of the engine; chassis, or body of the car you make will stay together until taken apart?

Spring Nut Locks

are the simplest, surest, safest device to positively lock any nut on any bolt. Resists all vibrations. Cannot harm threads. Easily applied. Released whenever desired.

Cheapest and Best.

Manufacturers, Jobbers, Garage Men, Repair Men and all Dealers should write for prices on sizes now available. Orders filled in rotation. All sizes by January 1st.

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651 Transportation Bldg.
Chicago

Spring Nut Lock tightened against Nut. Prevents Nut being shaken off and follows Nut tightening against material.

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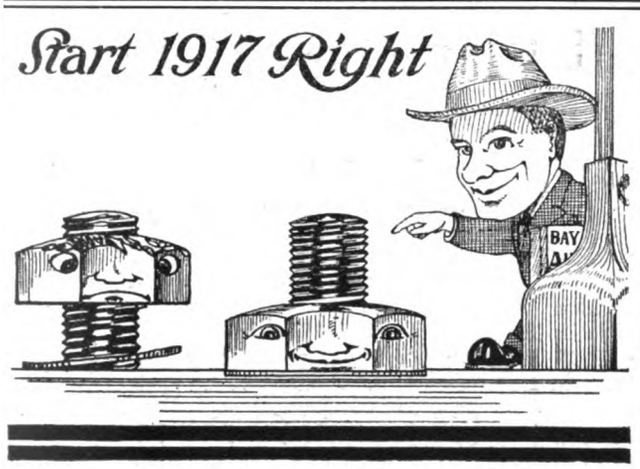

Upon every nut the wrench should call,
In Winter, Spring, Summer and Fall,
It keeps them firm, and to do it right,
Have a Bay State Autokit in sight.

BAY STATE AUTOKIT WRENCHES

Are Time and Labor-Saving Tools in Any Shop or For Any Work.

The worker selects instantly from the Autokit outfit the exact tool for the job. He wastes no time, the wrench will fit and the work can be quickly and efficiently done.

With a Bay State Autokit any nut, bolt or cap screw can be reached wherever located, no matter what the angle. With makeshift tools time is wasted and the work is not certain nor safe.

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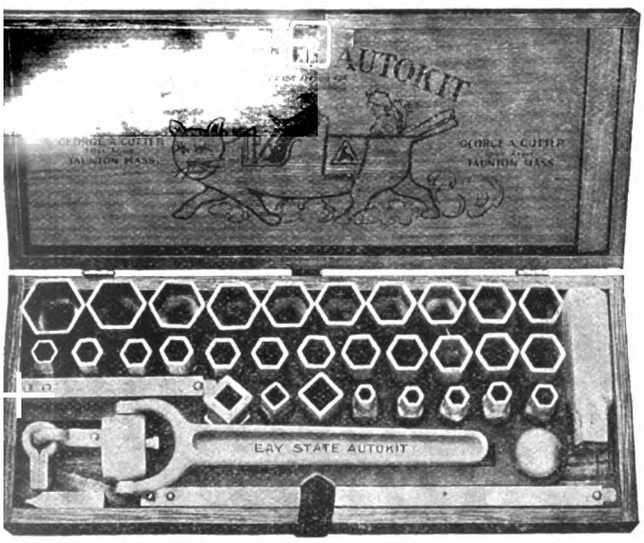
The Autokit consists of tools of proven design, made of the highest quality material, that are guaranteed to be 100% efficient, and will give extreme satisfaction in the hardest service.



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Set No. 1, 31 Sockets	**$10.00**
Set No. 2, 12 Sockets	**7.50**
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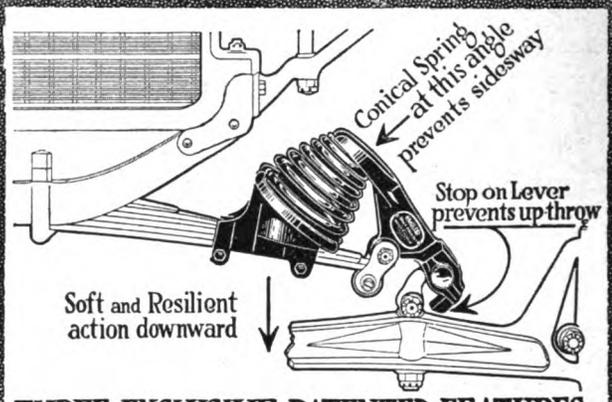

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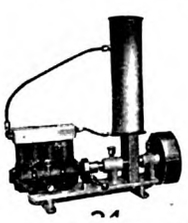
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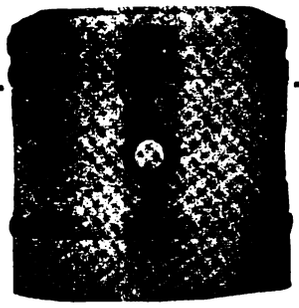

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Being one-third as heavy as the cast iron cannon ball type, they ***increase*** power and speed, and ***reduce*** vibration, carbon deposit and wear on bearings, and ***save*** fuel.

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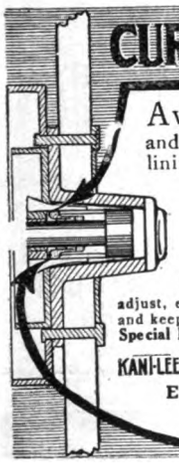

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are the positive and inexpensive remedy. A set of four makes grease "stay put" Simple, nothing to adjust, easily applied. They'll end rear-axle bearing troubles and keep repair bills down. **Per Set. 75c**

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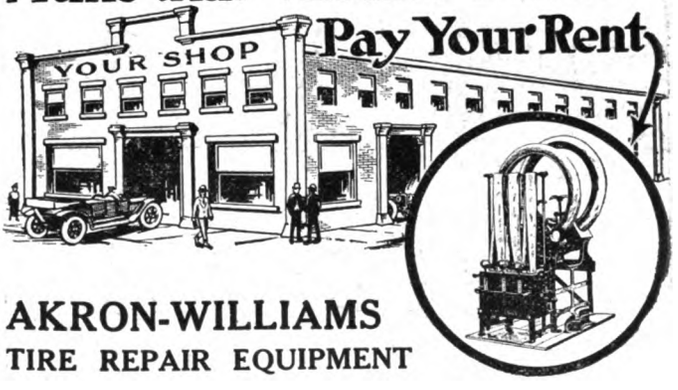

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If you are using one outfit without the other it's about like buying a suit of clothes without the pants—your equipment is not complete.

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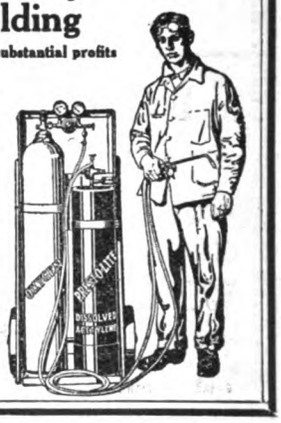

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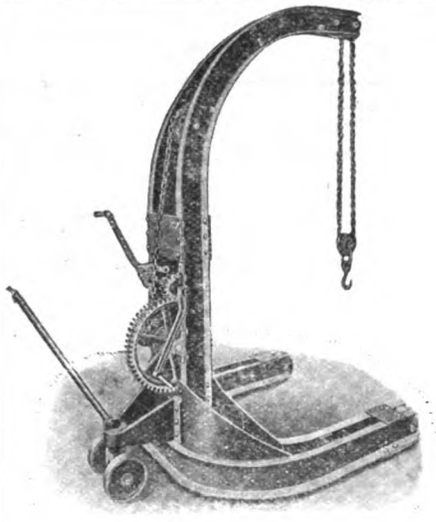

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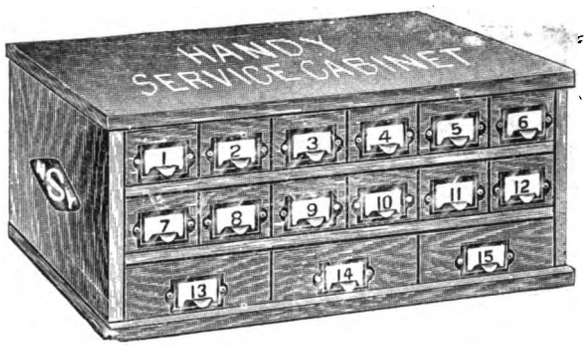

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H. B. users are averaging $20.00 to $60.00 per month CLEAR PROFIT.

Read What Some of Our Satisfied Users Say:

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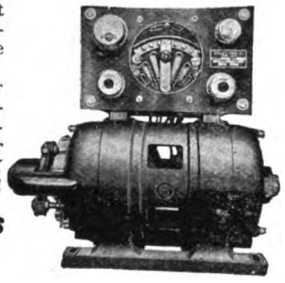
Send in this ad with your name, we'll gladly send particulars about this profit making H. B. Set. Send your name NOW. DELAYS PAY NO DIVIDENDS. DO IT NOW!



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Get the agency for the "Tonford" truck unit—one of the quickest selling propositions you ever tackled. Attached to a Ford chassis, makes a one-ton truck. Light, strong, economical, easily handled. Drygoods merchants, furniture dealers, retailers in almost every line, bottlers, farmers, creameries, all want it. Find it best possible buy.

$325— Tonford —$325

TRADE MARK

All the facts that sell the Ford, sell the Tonford. Highest grade truck attachment made—easiest to attach—strongest, most durable. Best constructed truck unit on market—lowest priced. Get busy now, while territory is still open. Write today. Learn how "Tonford" dealers pile up profits.

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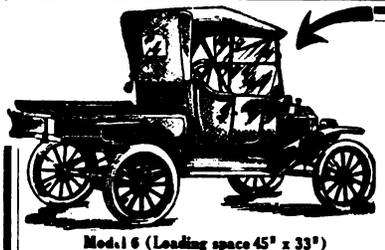

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Address Sale. Dept. for New Catalogue.

THE COMMERCIAL AUTO BODY CO.

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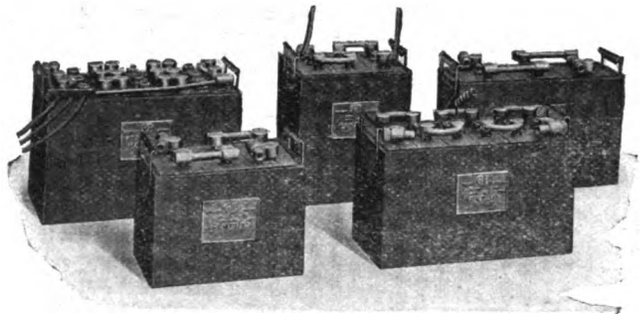

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Quality alone counts. Titan Storage Batteries made with Titan (overload capacity) Grids insure satisfaction alike to dealers and customers.

Titan Batteries and Parts satisfy every demand of a First Class Service Station in variety, in quality, in price and prompt delivery.

If you place your own reputation and your own profit first it will pay you to write the

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are positively guaranteed to hold air indefinitely without loss of pressure.

CAUTION

Do not confuse Scaife Copper-Brazed Tanks with the cheap Welded or Soft-Soldered Tanks made by others.

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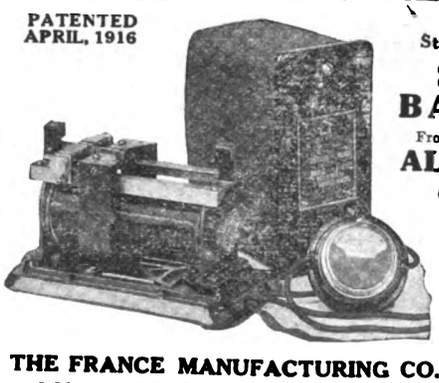

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From 110 or 220 Volt 60 Cycle

ALTERNATING CURRENT

10 Ampere Output

$15, Complete

F. O. B. Cleveland

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THE FRANCE MANUFACTURING CO., Cleveland, Ohio

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An ELAPSED TIME RECORD

The elapsed time recorder

of a Repair Job is your best evidence to your customer that the accounting of the work is correct.

He knows that he is not being charged for workmen's errors and the garage owner knows what his costs are.

Satisfaction with repairs helps immensely to secure a new order for the same make of car.

One Calculagraph will print the starting and finishing times and compute and print the elapsed time for all your workmen.

Send for free booklet W illustrating a complete set of forms for a simple time system for garages.

CALCULAGRAPH COMPANY

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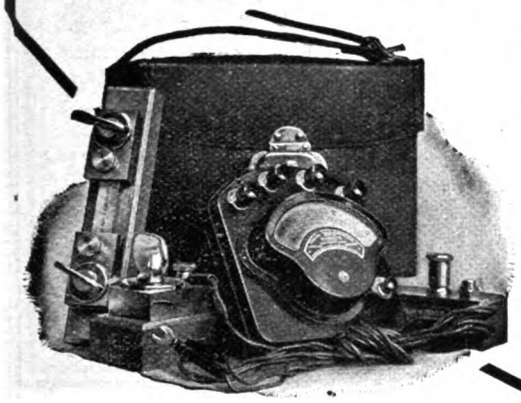
Do You Get Your Share of This Business?



If you can repair and adjust Electrical Starting and Lighting Equipment, you will get the cream of the garage business. With the increasing demand for this sort of service, you must equip to handle the business or lose it.

Weston Model 280

GARAGE TESTING INSTRUMENT

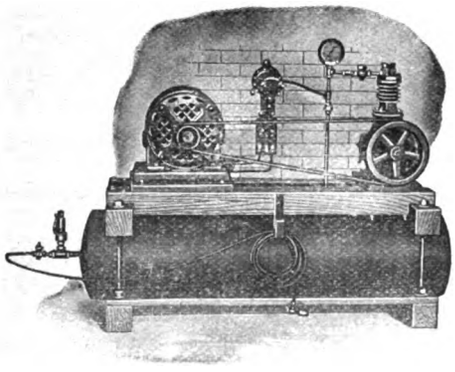
Is the best, the most reliable, and therefore the cheapest electrical equipment for you. It enables you to determine promptly and accurately the condition of the electrical equipment of any automobile, just where the trouble is, and just how to remedy it. Write for our Special Proposition.

WESTON ELECTRICAL INSTRUMENT CO., 103 Weston Ave., Newark, N. J.

Branch Offices in the Larger Cities

GARDNER

STATIONARY FREE AIR UNIT



FOR

SERVICE ECONOMY DEPENDABILITY

A Gardner Outfit of this type installed in ***your*** garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY

126 Williamson St., Quincy, Ill.

Singer Bldg New York City | Fisher Bldg Chicago | 5 First St. San Francisco

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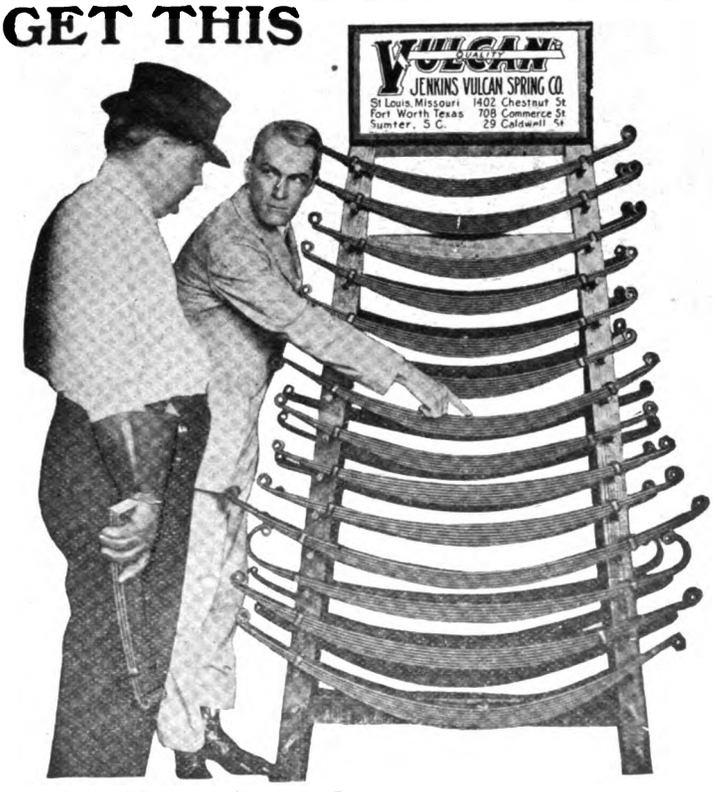

Jenkins Vulcan Spring Co.,

1402 Chestnut Street, St. Louis, Mo.

Gentlemen:—Please send proposition on agency for VULCAN springs.

Signed_____

Address_____

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FOR MOTOR CARS AND MOTOR BOATS.

Tenox Liquid Gasket makes a non-leaking, lasting and perfect joint, when attaching cylinder heads to cylinder blocks, cylinders to crank case and assembling crank and gear cases. It is ideal for use on pipe threads and all oil and fuel connections.

Tenox Liquid Gasket takes the place of copper, asbestos or paper gaskets and saves time, labor and material, requiring no cutting or bothersome fitting. **IT ALWAYS FITS AND NEVER LEAKS. TENOX LIQUID GASKET IS APPLIED WITH A BRUSH; LIKE PAINT.**

For owners, repairers, garage and machine men Tenox Liquid Gasket is the practical solution of difficult and doubtful repair work. To obtain a perfect joint, simply clean the faces of the flanges, cover both surfaces to be joined with Tenox, using a brush, and assemble—almost instantly you will have a perfect non-leaking joint. No other gasket will last so long.

Tenox Liquid Gasket is used and recommended by some of the largest producers of motors in America. They say Tenox should be used in all shops and carried in every car. If you are doubtful, a trial can will be forwarded post paid, upon receipt of 30 cents. You will receive enough for almost any job.

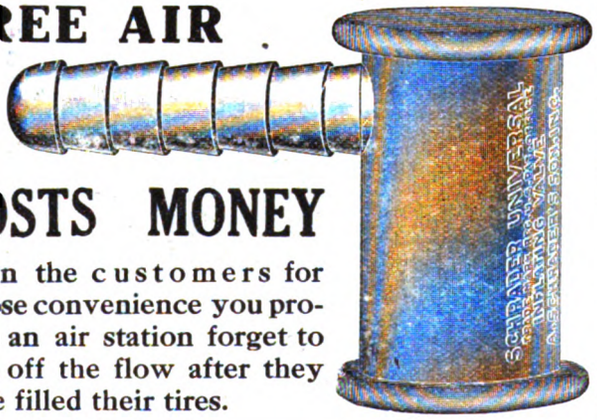
JOBBERS AND DEALERS—We guarantee perfect results or refund your money. Tenox has been tried, tested and proved. It is sold by thousands in the trade. If you do not sell or use Tenox, write today.

List Prices: One-eighth Pint $.25. One Pint $ .80. One-Half Pint $.50. One Quart $1.50.

No other gasket necessary or desirable. The cost of time and labor saved by using Tenox will generally pay for the whole job.

TENOX PRODUCTS CO. Audubon Park, 158th Street, NEW YORK CITY.

FREE AIR



COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Automatic Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from 1-4 in. to 5-8 in.

PRICE ONE DOLLAR

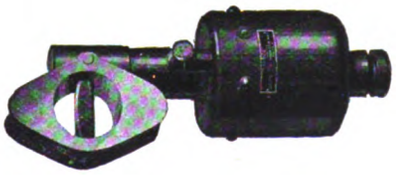
Manufactured by

A. SCHRADER'S SON, Inc.

800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

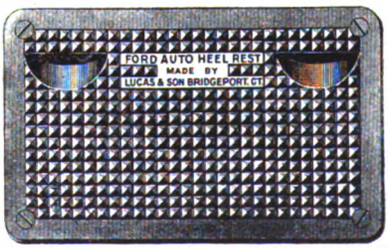
PIERCE GOVERNORS



Can be easily and quickly installed, and will provide positive and absolute speed control for any type of automobile, motor truck, tractor, marine engine, or stationary engine.

Recommended and used by all the prominent manufacturers,

PIERCE GOVERNOR CO., Anderson, Ind.



HEEL REST For FORD Cars

Size 5x7 ins., ⅛ in. thick, made of frosted aluminum, with ⅜ in. polished band. Will protect rubber mats of any Ford car. Locates heel for both clutch and brake pedals (push reverse pedal with heel, it works fine). Pyramids and raised letters cast solid—cannot flatten or wear through—cannot rust or tarnish; are easily kept clean.

Is a neat, useful foot rest—a convenience and an economy. Sold by all dealers for $1 each or sent postpaid on receipt of price.

We make the Auto Heel Rest used extensively on other cars for the same purpose.

DEALERS: Send for circular and trade discount. Made only by

BRIDGEPORT **J. L. Lucas & Son** CONNECTICUT

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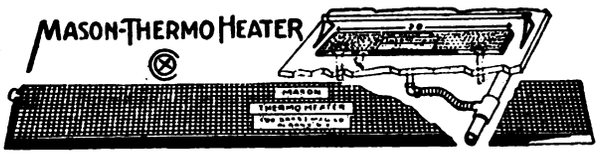
BIG SALES

ALWAYS BRING YOU NEW PATRONS AND

BIG PROFITS

Both sale and profits are certain for the dealers and jobbers who sell the

MASON-THERMO HEATER



The most practical car heater ever devised. Rests on the floor, is quickly and easily installed without changes, and is connected by flexible steel tube to the exhaust manifold, so that the exhaust gas circulates through it, perfectly warming the body. It is automatic in action. There is no back pressure from exhaust.

LIST PRICE, COMPLETE:

Heavily nickeled bronze.....$15
Cast iron, black enameled.....$10

Dealers and Jobbers: Our sales proposition is big, in business and in profits. At request we'll explain it and quote prices and discounts.

COX BRASS MFG. CO.

Established 1872

ALBANY—11 Mt. Pearl and Van Wort Streets.
NEW YORK CITY—1783 Broadway.

DIXON'S GRAPHITE Automobile LUBRICANTS

2½ Pounds of Life Insurance

Insurance for the life of your car because No. 680 fully protects differential gears and bearings; insurance for YOUR life because No. 680 "stays put" in the differential case and eliminates the possibility of dangerous, greasy brake drums.

Dixon's Non-Leak Grease No. 680 is a member of the well-known line of Dixon's Graphite Automobile Lubricants. It contains the proper proportion of selected flake graphite to form protective coatings on bearing surfaces and its adhesive quality prevents leakage.

The 2½ lb. package is of special interest to Ford owners.

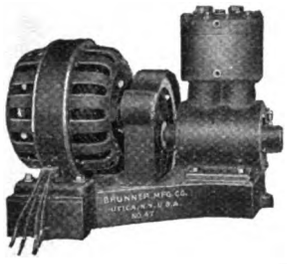
Send for Booklet 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Co.,

Established 1827

BRUNNER AIR COMPRESSORS



have consistently demonstrated their sterling worth in the garage—ever since the garage business has been a business----

The Brunner is honestly built and honestly advertised.

Be Honest With Yourself Mr. Garageman

investigate the Brunner Line before you order your new air compressor---send for our catalogue and handbook on compressed air---get the facts---protect yourself against trouble.

The Brunner Air Compressor has survived endless competition and the fact that there are more Brunners going into garages today than there are compressors of other makes---should convince you that the Brunner should be your choice.

Write for particulars and name of Brunner Jobber covering your town.

BRUNNER MFG. CO.

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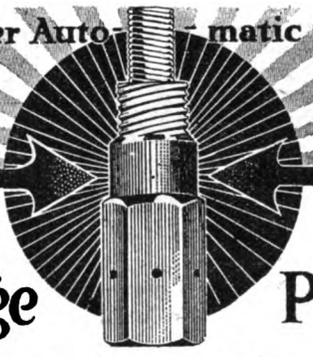
Cincinnati Branch
419 First National Bank Bldg.
CINCINNATI, OHIO

The Pioneer Auto- - matic Gas Saver



More Mileage More Power

AEROFRAM Gas Saver

The Simplest and Most Efficient of All Gas-Saving Devices—Effects a Notable Improvement in Engine Performance—Anybody Can Install It in Ten Minutes—For All Cars.

Absolutely Automatic—Nothing to Adjust

Dealers: The Aerofram actually does the work that more expensive gas-savers claim to do. When you offer it to your customer you do so with the certainty that he cannot duplicate its efficiency with any other device at ten times the price. It will positively add two to six miles per gallon—in many cases more. Hundreds of users have testified to this. Write for details. Liberal selling terms.

Price in Canada $1.50

$1 **The Aerofram Co.** $1

107 Massachusetts Avenue. Boston, Mass.

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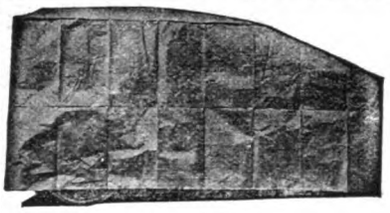


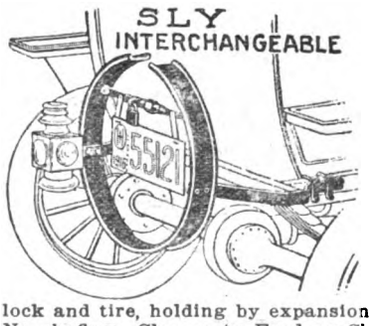
KENNEDY AUTO STORAGE COVERS

Furnish efficient and economical protection for cars in dead storage. They are made of heavy, durable paper, in standard sizes to fit any cars.

MADE ONLY BY

THE KENNEDY CAR LINER & BAG CO.
SHELBYVILLE, IND.

HESS-BRIGHT
BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
THE HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA, PENNSYLVANIA, U.S.A.



SLY Interchangeable and Cradle Type TIRE HOLDERS

Interchangeables quickly adjustable for all Ford and Chevrolet tires and demountable rims. Combines place for lamp, number plate lock and tire, holding by expansion grip on inside of tire. No chafing. Clamps to Ford or Chevrolet frame without drilling or bolting. At all jobbers, or write

New Era Spring & Specialty Co.
865-A Woodward Ave. Detroit, Mich.

New Ford Carburetor Attachment

that's making a lot of money for dealers everywhere

Makes Ford cars start instantly—stops the roar and clatter—makes the Ford cooler running at all speeds—practically eliminates carbon—makes the engine so flexible it can be throttled down to less than four miles an hour on "high"—MAKES A GASOLINE SAVING OF 15% to 50%, or $1.50 to $5 per month. Write us to send you a

MyleMayker

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MYLE-MAYKER COMPANY
Dept. 12-J, 323 East 33rd Street, CHICAGO, ILL.

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Equip Your Garage with a WhitneyHand Miller

so you won't have to turn away profitable repair business, or turn it over to the machine shops.

The Whitney will take care of any milling job in the line of auto repairs. With it you can cut gears, cams, sprockets, do key seating, straddle milling, profiling, slotting, slabbing, drilling, die sinking and countless other operations.

With this all around machine you can handle the work in your own garage. You can avoid delays; you can accommodate customers.

Simply send a postal for catalog No. 3

THE WHITNEY MFG. CO., - - Hartford, Conn.

CHAINS-KEYS-HAND MILLING MACHINES

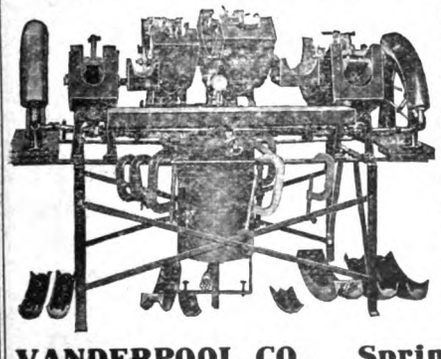
NEW DEPARTURE BALL BEARINGS

American Made FOR American Trade

QUALITY FIRST

THE NEW DEPARTURE MANUFACTURING CO. UNDER CONRAD PATENTS LICENSES BRISTOL, CONN., U. S. A.

Big Money Double Treading



Lots of Work. Vulcanized Double Treads wear better, look better. This Vanderpool Vulcanizer does double treading and repairs all size case and tubes from 3 to 5-inch inclusive.

VANDERPOOL CO., Springfield, Ohio

and 1044 S. Main Street, Los Angeles, Cal.

THE NORMA CO. OF AMERICA

Extends to You the Season's Greetings

We thank you for your business that helped make 1916 a good year for us. We trust that "NORMA" Ball Bearings helped make it a good year for you. We promise you heartiest co-operation toward making 1917 an even better year. We earnestly wish, by service rendered and quality maintained, to strengthen the ties of friendly business with old customers and to win the confidence of new ones.

During 1917---as in years past---be sure that your magnetos, lighting generators and starting motors are "NORMA" equipped.

THE NORMA COMPANY OF AMERICA

1790 BROADWAY NEW YORK

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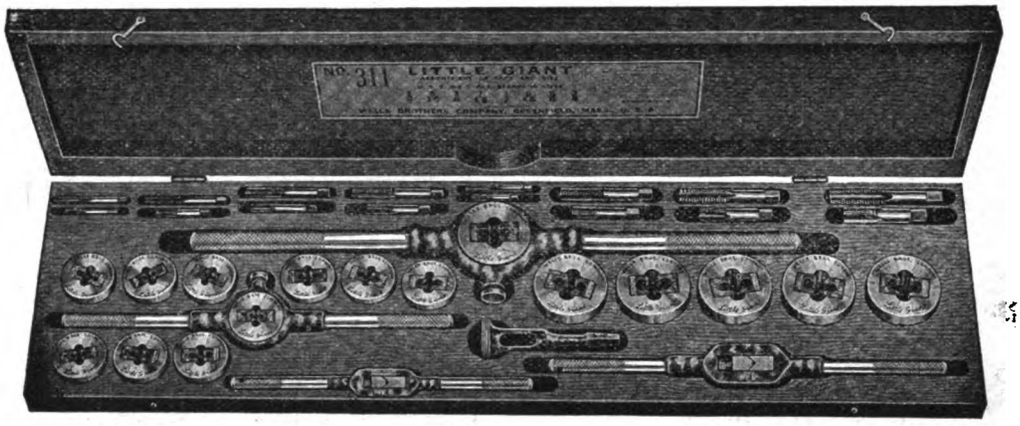
Little Giant Combination Screw Plates

Both United States and S. A. E. Standards



These assortments are particularly valuable in the automobile repair shop where a considerable amount of threading is done. Each die is contained in its own collet and is adjusted to size. There is also a Bit Brace Die Holder for cleaning up battered threads in hard-to-get-at-places.

Every need of the manufacturer, the garage and repair man, or the car owner who makes his own repairs, for tap and die assortments can be supplied from our big line.

Send to-day for the circulars "Tools for the Automobile" "First aid in the up-keep of the Automobile".

Greenfield Tap and Die Corporation, Greenfield, Mass.

New York Chicago Philadelphia Galt, Ontario

Time Savers

For Charging Storage Batteries

HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.

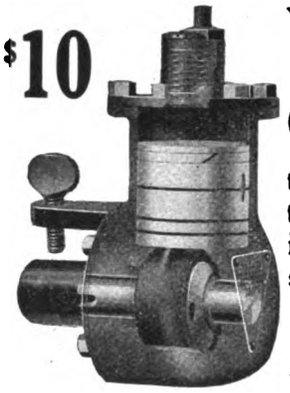
Made of steel—lead plated—may be used over and over again.

No. 21-A—1½" spread of jaws.

Your money back without quibble if not entirely satisfied.

Single Lots, Each 20c Lots of 10, Each 15c Lots of 100, Each 12 1-2c

R. S. MUELLER & CO., 431 High Ave., S. E., Cleveland, Ohio.



YOU CAN SELL A

$10

DETROIT Gearless Tire Pump

to 75 per cent. of the motorists to whom you show it. It goes on the crankshaft when you use it.

DETROIT ACCESSORIES CORP.

519 Hillger Avenue Detroit, Michigan

Will pay for itself in a few days

The Superior **Vulcanizer**

Be independent. Do your own Vulcanizing.

SUPERIOR'S are simple, efficient and inexpensive.

They do all kinds of repairs on casings and tubes

Write for descriptive catalog

SUPERIOR VULCANIZER CO.

A-16 Fulton Avenue ROCHESTER, N. Y.

WE REPAIR

BUY, SELL AND EXCHANGE

Coils, Magnetos, Starting and Lighting Systems, High Tension Outfits and Motors

We Repair any Kind of an Electrical Heating Device

MABEY ELECTRIC & MFG. CO.

968 Fort Wayne Ave., Indianapolis, Ind.

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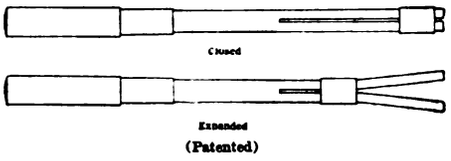
Jiffy Bushing Extractor for FORDS



(Patented)

Removes

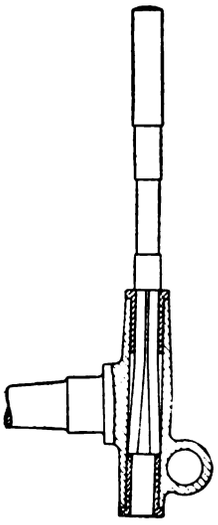
Steering Knuckle
Spindle Arm
Spindle
} BUSHINGS in a JIFFY

Made of Tool Steel and nicely finished.

Indispensable to the repairman or the owner who does his own work.

When removing Steering Knuckle Bushings it is not necessary to remove wheel.

Pays for itself in a few minutes.



Light Weight Piston for FORDS

Weight 1 Lb. Less Than Standard Ford

Manufactured to the Limit of 2 Ounces Variation in Weight

A PISTON AS FINELY MADE AS THOSE USED IN THE HIGHEST PRICE CARS

A reduction of 4 lbs. weight on reciprocating parts saves a tremendous percent of crankshaft and wrist pin bearing wear.

These pistons are cast on a moulding machine of special design insuring concentricity in casting to eliminate variable strains.

Metal is composed of elements insuring perfect bearing surfaces, toughness and durability.

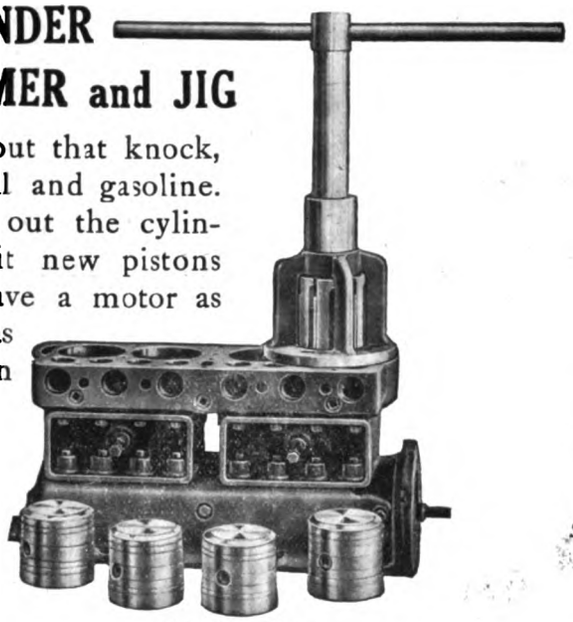
Centered on a special fixture that grips the casting on the inside walls, producing a structure of uniform thickness.

The groove that supplies oil to the wrist pin is more than ordinarily deep to prevent filling up.

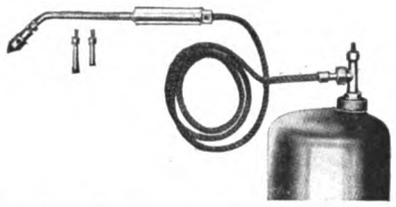
Pin bosses are drilled top and bottom for additional oiling.

CYLINDER REAMER and JIG

Take out that knock, save oil and gasoline. Clean out the cylinders, fit new pistons and have a motor as good as when new.



DAVIS PATENT



Acetylene Brazing and Soldering Outfit. One of handiest tools you could have.

Style A Welding and Carbon Removing Outfit with Truck

Oxy-Acetylene Equipment Made in Several Different Units for Welding and Steel Cutting.

Oxy-Hydrogen Lead Burning Outfit.

Recommended particularly for storage battery work.

See Our Exhibit at the Boston Show, Spaces 405-406

THE G. H. DYER COMPANY, - - - Cambridge, Mass.

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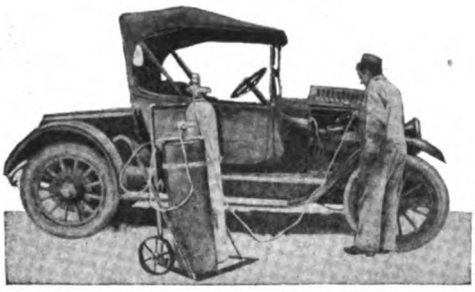
WATER WELDING

All FOUR in ONE

At last a perfect outfit. While new it has been tried, tested and better and the greatest time and labor saver ever offered. A won

Welding, Carbon Burning, Battery Working, Welding Equipment all in One.

IT WAS MADE FOR YOU



As a Carbon Burning Equipment.
Burning Out Carbon.

As a Battery Working Equipment.
Removing the Cells.

THE COST IS SMALL—

SAFE SURE

3 PELHAM STREET

WATERHOUSE W

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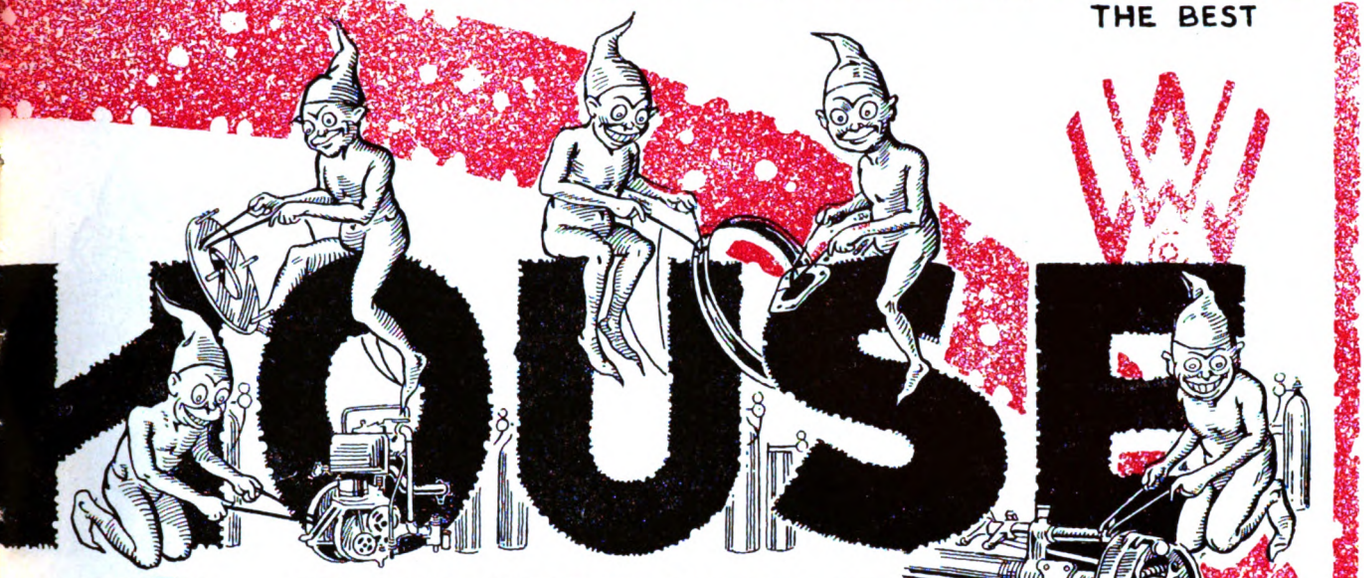
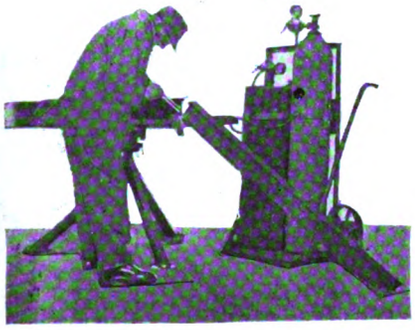
THE BEST



HOUSE OUTFIT

– At the PRICE of ONE

roven. All the combinations needed, wanted or desirable. Bigger, er worker, a money maker in any garage, repair or machine shop.



As a Cutting Equipment.
Cutting I Beams.

As a Welding Equipment.
Building Up Teeth on
a Cog Wheel

Build Your Business, Bank Roll, Standing and Earn the Prestige.

DO YOU NEED ONE?

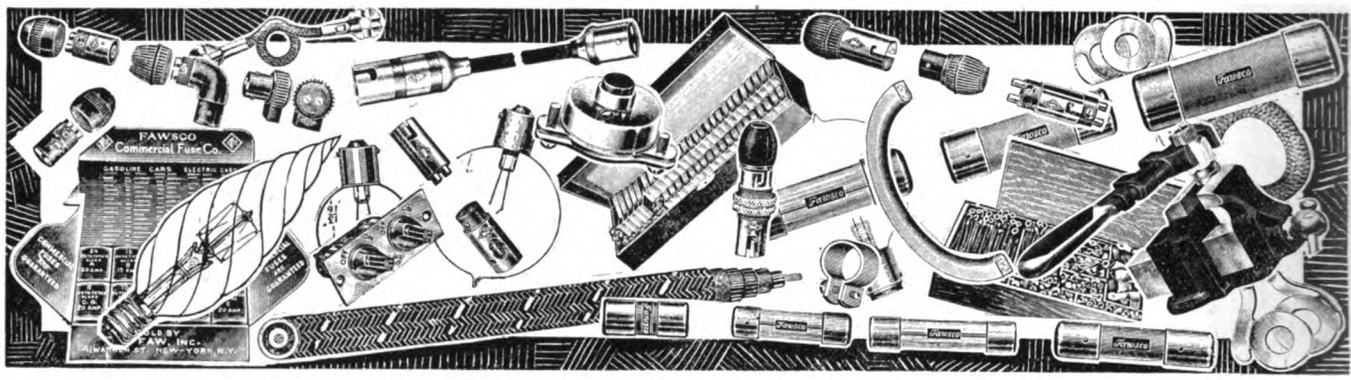
HE UTILITY GREAT

LDING COMPANY

BOSTON, MASS.

GUARANTEED

An Assortment



A

Battery Connectors and Terminals

15 Numbers, 375 Pieces

Retail Value..... $9.85 Dealer's Cost..... $4.50

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10 Numbers, 1150 Feet

Retail Value..... $87.50 Dealer's Cost..... $45.80

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Culver-Stearns Holdfast Bayonet Plugs, Sockets and Receptacles

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10 Numbers, 200 Pieces

Retail Value..... $21.60 Dealer's Cost..... $10.80

E

Regular Copper Asbestos Gaskets

42 Numbers, 218 Pieces

Retail Value..... $7.60 Dealer's Cost..... $5.00

F

Special Copper Asbestos Gaskets

For Fords, Overlands, Cadillacs and Dodge

27 Numbers, 162 Pieces

Retail Value..... $28.30 Dealer's Cost..... $18.00

G

Horns, Hand and Electric

4 Numbers, 14 Pieces

Retail Value..... $36.00 Dealer's Cost..... $24.45

H

Hose Clamps and Bands

18 Numbers, 180 Pieces

Retail Value..... $12.00 Dealer's Cost..... $6.00

J

Lamps-Dash-Trouble-Spot-Search

11 Numbers, 28 Pieces

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J. H. Faw Inc.

Main Office 41 Warren St. New York City - Branch Atlanta, Ga.

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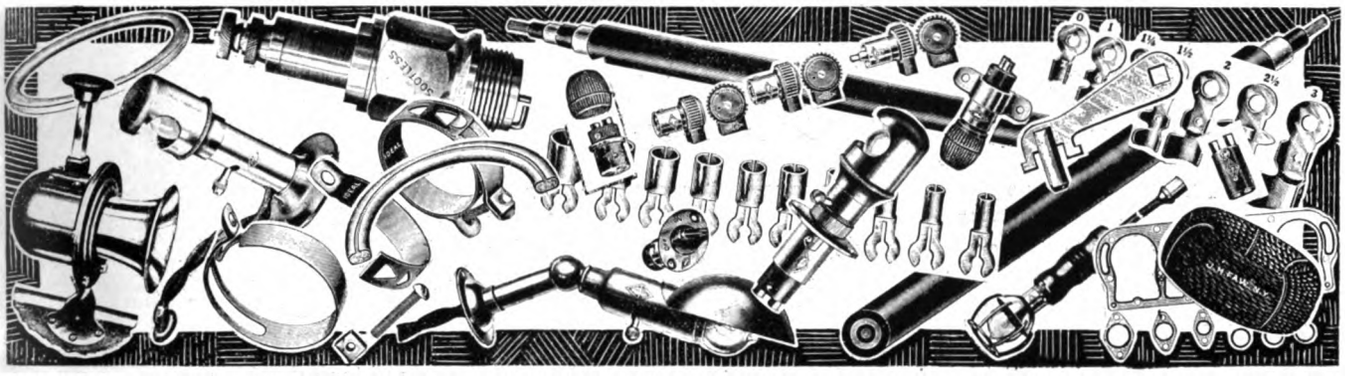
Assortments



K

Lamp Bulbs, "Tungsol"

Vacuum and Nitrogen

31 Numbers, 225 Pieces

Retail Value..... $65.00 Dealer's Cost..... $32.50

L

Shim Brass and Shims

21 Packages, 4000 Square Inches of Stock in thicknesses from .002 to .015 and 400 asstd Shims for Ford Cars

Retail Value..... $20.00 Dealer's Cost..... $12.10

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Spark Plugs

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10 Numbers, 100 Pieces.

Retail Value..... $87.50 Dealer's Cost..... $52.50

O

Switches and Keys

Pull-Push and Lever

11 Numbers, 195 Pieces.

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P

Walden-Worcester-Socket Wrench Sets

5 Sets, 167 Pieces.

Retail Value..... $43.00 Dealer's Cost..... $28.67

R

Walden-Worcester Special

Service Socket Wrenches for Fords, Overlands, Buicks, Dodges

28 Numbers, 108 Pieces.

Retail Value..... $51.20 Dealer's Cost..... $34.13

S

Walden-Worcester General Service Socket Wrenches

Including Speed, Angle, Offset and Rim Braces

35 Numbers, 70 Pieces.

Retail Value..... $31.50 Dealer's Cost..... $21.00

16 Assortments

300 Numbers, 2788 Pieces.

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The Test that Showed Over 59% Greater Gasoline Mileage With the Wilmo Manifold

Scene — Lincoln Park, Chicago. Date—Thursday, January 25th, 1917. Temperature —15 above zero. Road conditions—Ice and snow. Weather—"Blizzardy."

Present—Gathering of representatives of Chicago newspapers and national automobile publications. Their attitude —"Show me."

Car used — Ford, License No. 172017, Illinois. Owner —W. T. Magrane, 5704 Washington Blvd., Chicago.

Speed of tests 20 miles an hour.

Using regular factory equipment only, 14 4-10 miles to the gallon were obtained.

Then a Wilmo Manifold was attached in a few minutes by means of an ordinary monkey-wrench.

With the Wilmo Manifold 23 miles to the gallon were obtained—a gasoline mileage increase of 59 6-10% as against the mileage made with regular equipment only.

Following right on the heels of other official tests made under the direction of L. A. Hillman, Chicago, technical representative of the American Automobile Association, and which showed an increase in gasoline mileage of 42% to 54% as a direct result of Wilmo Manifold efficiency, this "newspaper man" test has an added appeal to you as an automobile man.

Shorn of details, the Wilmo Manifold utilizes the heat of the exhaust gases to superheat and completely vaporize the incoming mixture so that every vestige of gasoline is converted into clean, full-bodied power.

And in addition, practically all carbon troubles are eliminated. The diagram below tells the story.

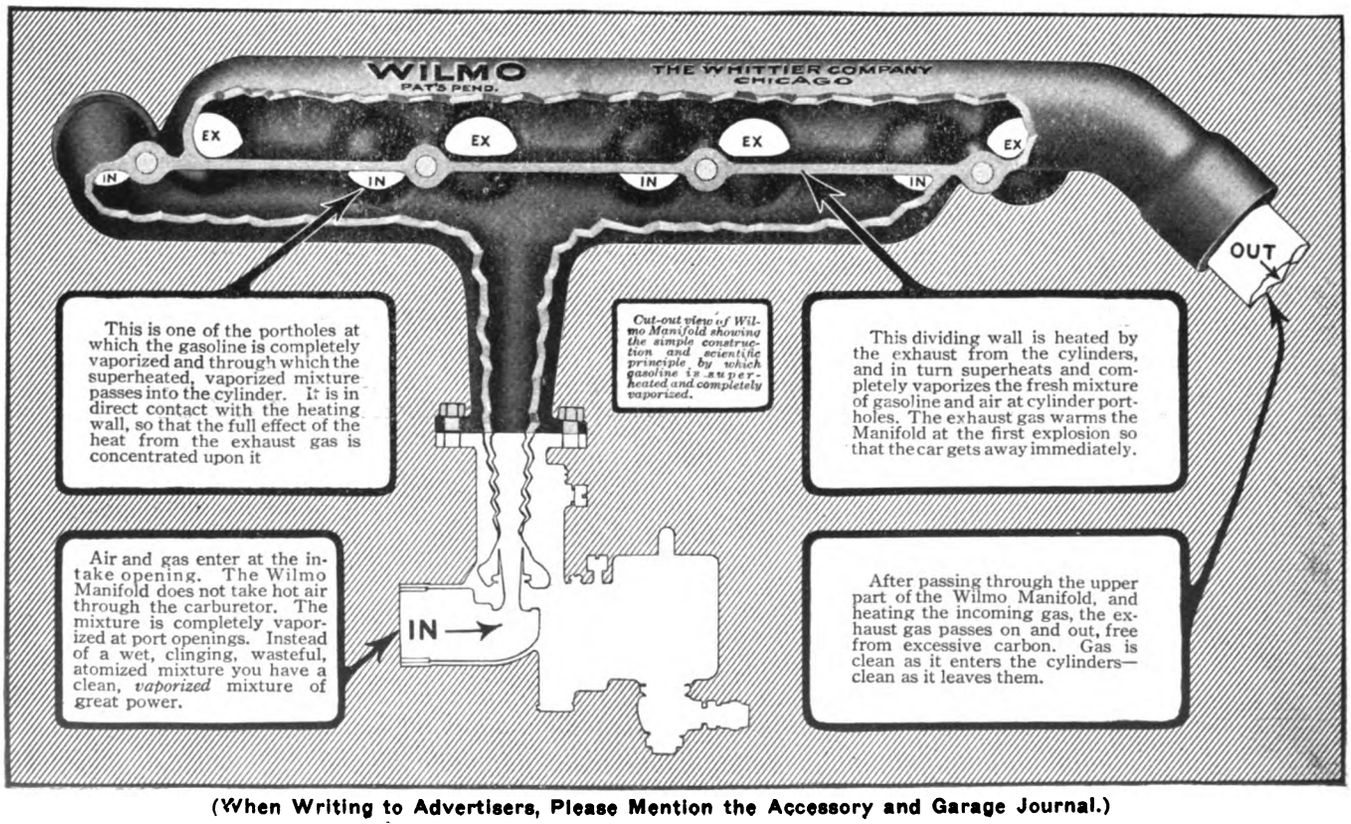
The Wilmo Manifold is being nationally advertised in the country's foremost publications. Sales are made through dealers - through *you*.

Retail prices, $7.50 to $15, depending on the make of car.

Attached to the engine in thirty minutes with a monkey-wrench. No holes to bore.

A year 'round seller. A money maker and prestige builder for you. Write today for all official tests, prices and dealer plan.

The Whittier Company
First National Bank Building, Chicago, Ill.



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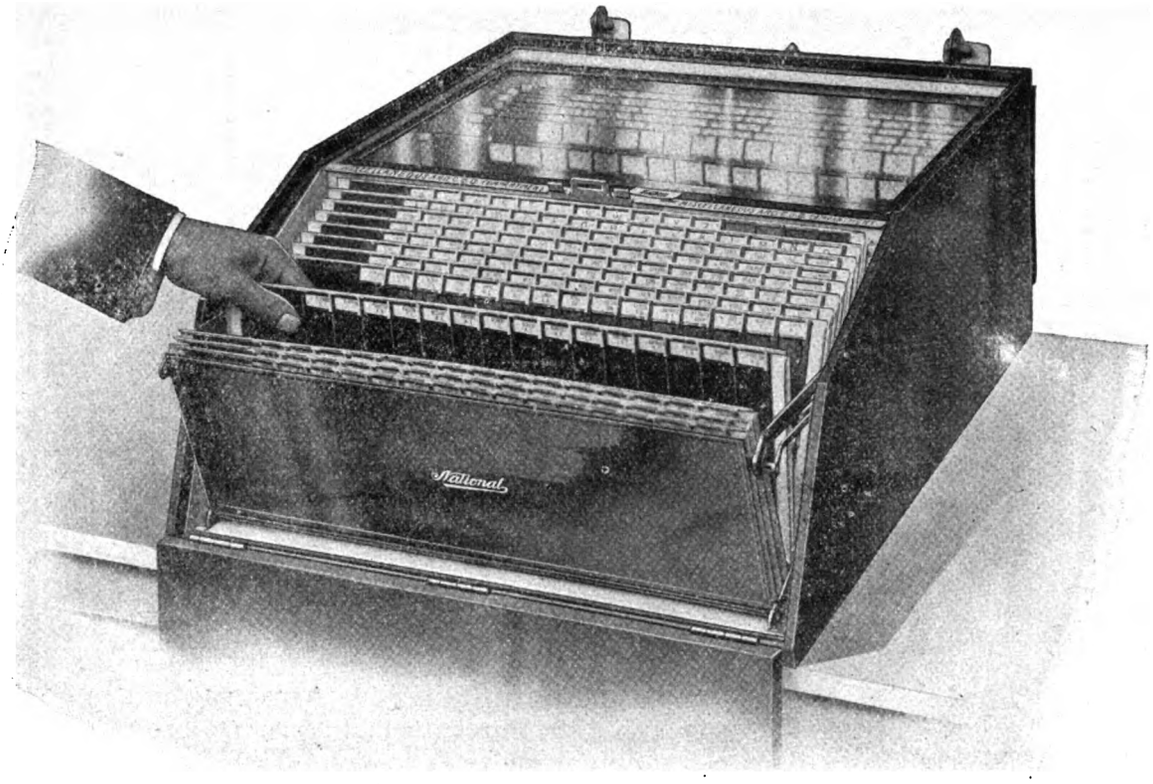

A New N. C. R. Invention

As important to you as your telephone or cash register

It's a new credit file that *safeguards* your credit business—in a better, easier, safer, quicker way than you thought possible.

It is so simple that anyone can operate it.

It is so speedy that all entries are made in the presence of the customer, who leaves with a statement of the purchase—plus a record of the balance carried forward.

It is so convenient that you can set it on any size counter, table or desk. The exact balance due from any customer is instantly available, and the file can be operated with one hand while the other holds the telephone receiver.

It is so complete that a true record of the whole credit business is always available in short order.

And this knowledge alone is worth more than the cost of the file.

It is so safe that records once filed in its locked compartment cannot be lost or destroyed. Records can be seen, but not tampered with.

A few weeks' use will pay for it.

There's nothing else like it, and it can be seen at the N C R office near you, or a letter to us will bring you complete information.

See this new file or find out how it will stopyour losses, please your customers, and relieve you of work and worry. Use the coupon.

The National Cash Register Co.
Dayton, Ohio

Please send full information about your new Credit File.
We have about.....
Charge and C.O.D. accounts

Name.....
Firm.....
Address.....
.....

Accessory & Garage Journal

The National Cash Register Company
Dayton, Ohio

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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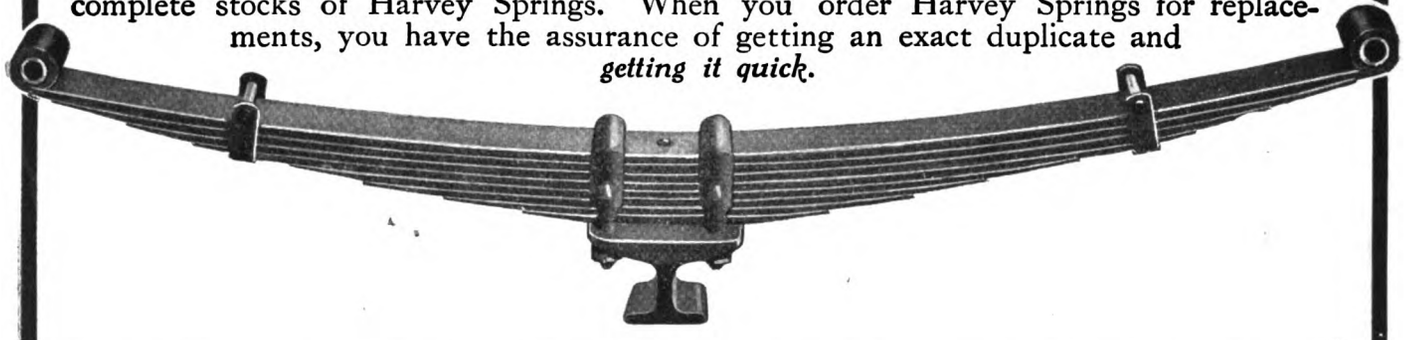
Harvey
RACINE

20,000 SPRINGS
ALWAYS IN STOCK

There's a Harvey Spring manufactured for practically every make and model of car. Our immense factory stock of 20,000 springs comprises over 600 different styles and sizes. You don't have to depend on the car manufacturer for replacements. You can get better springs and save time and trouble by ordering Harvey's.

Each spring is painted black and is wrapped and tagged—ready for instant shipment. Also, more than fifty large wholesale distributors, whose service covers every point in the United States, represent us exclusively and carry large and complete stocks of Harvey Springs. When you order Harvey Springs for replacements, you have the assurance of getting an exact duplicate and *getting it quick.*



MADE FOR ALL THE POPULAR CARS

ABBOTT-DETROIT
ALTER
ALLEN
APPERSON
AMERICAN
BRISCOE
BUICK
CADILLAC
CASE
CHALMERS
CHANDLER
CHEVROLET
COLBY
COLE
CROW-ELKHART
CUNNINGHAM
CUTTING
BRIGGS-DETROITER
DODGE
DORT
E. M. F.
EMPIRE
ENGER
EVERITT
FLANDERS
FORD
GRANT
HAYNES
HERRESHOFF
HOLLIER
HUDSON
HUPMOBILE
IMPERIAL
INTER-STATE
JEFFREY
KING
KISSEL-KAR
KRIT
LEWIS
LION
LITTLE
MARATHON
MARION
MARION-HANDLEY
MARMON
MAXWELL
MERCER
METZ
MICHIGAN
MITCHELL
MONROE
NATIONAL
OAKLAND
OLDSMOBILE
OVERLAND
PACKARD
PAIGE
PATERSON
PATHFINDER
PREMIER
PULLMAN
RAMBLER
R. C. H.
REGAL
REO
SAXON
SCRIPPS-BOOTH
STODDARD-DAYTON
STUDEBAKER
STUTZ
VELIE
VULCAN
WARREN-DETROIT
WESCOTT
WINSTON
SPECIAL STYLES AND SIZES MADE TO ORDER PROMPTLY.

Write for Free Book:—Gives complete details about numbers and sizes for all cars—any model. Also ask for name of nearest Harvey dealer. When you need springs, insist upon having "Harvey".

HARVEY SPRING COMPANY
851 Seventeenth St., RACINE, WISCONSIN

5

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67,500 SOLD First Ninety Days!

Dealers GET THIS:

67,500 sold in the first ninety days! Those ninety days the last ninety days preceding cold weather. Think of the sales and the profits dealers are going to make the ***next*** few months, in the BIG season, on this PROVED SELLER. The dealers who ***have*** the Myle-Mayker, are going strong ***right now!*** Now's the time FOR **YOU** to start.

We Are Backing You With the Snappiest, Most Up-to-Date, Most Effective Advertising Campaign Ever Devised—For You.

In addition to everything everybody else has ever done—National advertising, Motor Journal advertising, Newspaper advertising, live selling helps for you—we're going to put on a DIRECT-TO-FORD-OWNER MAIL CAMPAIGN TO GO OUT TO THE FORDERS OF YOUR NEIGHBORHOOD **OVER YOUR NAME.** It goes to the people you want to reach. It tells them that you are the live dealer handling the Myle-Mayker. We work hand in hand with you. IT MEANS BIG SALES FOR YOU.

What it is and how it works

The **Myle-Mayker** is a gravity operated auxiliary air control for the Ford carburetor—a control such as every high priced carburetor has. Nothing to regulate—nothing to get out of order—put on in a minute's time. Replaces the standard hot air pipe—no service—no adjustments.

What It Does for a Ford

1. Easier starting.
2. Quieter and cooler running.
3. Less carbon.
4. More flexible.
5. 3 to 10 miles more per gallon of gaso line.

The Advertising Is Starting Now!

You will get immediate sales on this Money Making Myle-Mayker—so—right now use the coupon. There is ***a handsome profit in them for you.*** And ***no after-sale service*** to ***eat up this profit.*** No adjustments to make—nothing to adjust on it. Goes on just as does the old hot air pipe. ***Get in the boat now. Get in on this easy money.*** Use the coupon. Order a trial Myle-Mayker. The MYLE-MAYKER lists at $5.00. We will allow the regular dealer's profit if you pin coupon to your letterhead, or business stationery. Send your order now. Don't delay—don't put it off. Hesitation means dollars out of your pocket. Act!

MyleMayker Company

Dept. 3, 56 East Randolph Street CHICAGO, ILL.

Myle-Mayker Co., Dept. 3, 56 E. Randolph St., Chicago, Illinois

Please send me one Myle-Mayker, which I want to test out with the idea of ordering a dozen or more if satisfactory. Enclosed is $3.50 (regular dealer's price). I agree not to sell at less than $5.00 retail.

Name .....

R. F. D. or Street No. .....

P. O. ..... State .....

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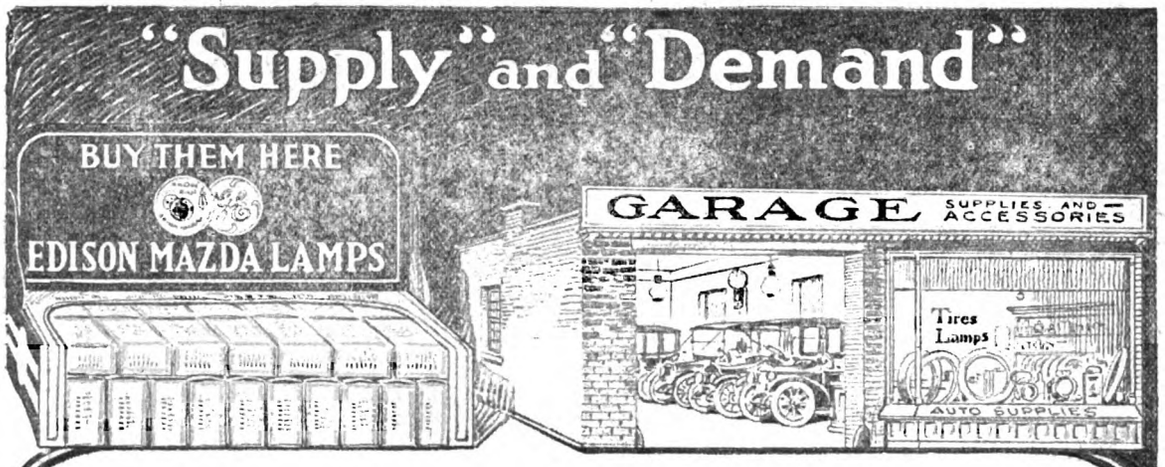


EDISON MAZDA

Automobile Lamp Assortment

Put this assortment on your counter or anywhere it will be seen and begin to do a business that will surprise you with its rapid and profitable turnover.

Here's an accessory that *has to sell.* The law says lamps —lighted lamps. This means new lamps for every motorist, now and then. Lamps get hard usage in automobiles.

The demand is steady and increases with every purchase of a motor car or truck.

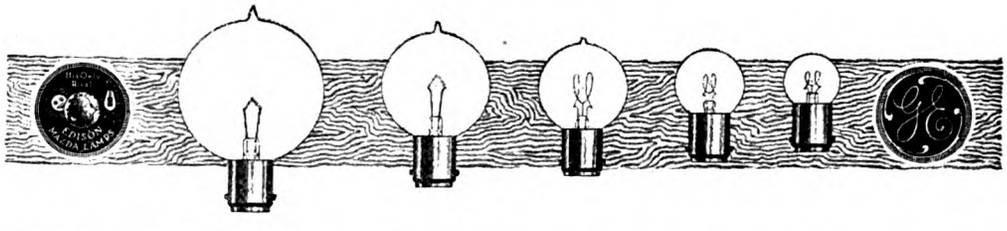
Somebody in your vicinity has to supply this demand. Do you know that *you* can do it at an investment about equal to the price of a tire? You don't have to *sell* EDISON MAZDA Lamps. They sell themselves wherever they're in sight. All you have to do is to hand them out—6 at a time—after ascertaining the make and model of your customers' car. Your EDISON MAZDA Auto booklet tells you or your clerk at a glance exactly what lamps in your Assortment Stock are correct for his car. Your customers will appreciate this service. You can re-order automatically.

EDISON MAZDA AGENTS!

Write for new, 1917 Edison Mazda Auto Booklet, listing lamps for all makes and models of 1915, '16 and '17 cars.

WRITE FOR AGENCY PLAN

EDISON LAMP WORKS
OF GENERAL ELECTRIC COMPANY
Harrison, N. J.
Sales Offices in Principal Cities



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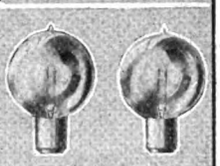
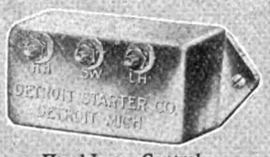
Our Reputation is *Your* Guarantee

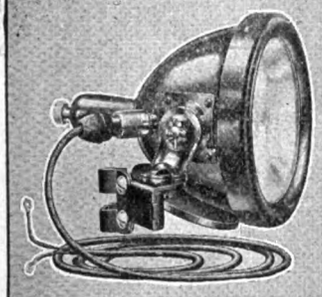
VERSAL PRODUCTS
FOR THE
UNIVERSAL CAR
DETROIT STARTER COMPANY
DETROIT, U.S.A.

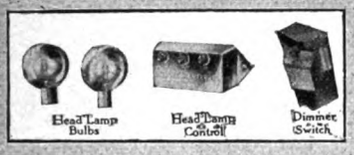
Electric Tail Lamp

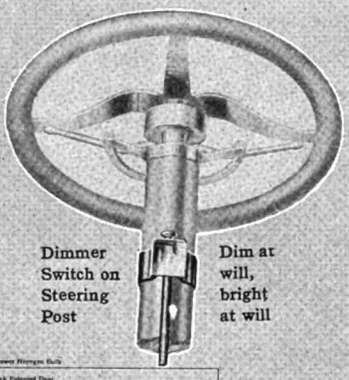

Extra 24 c. p. Nitrogen Bulbs



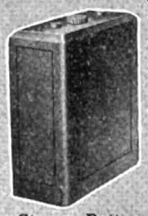
Head Lamp Control


Spotlight

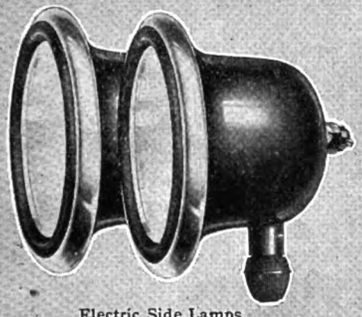


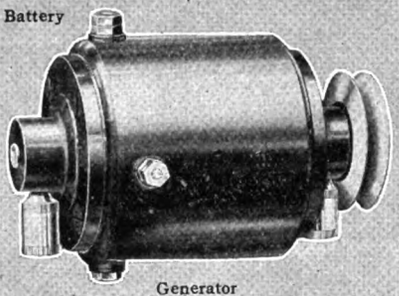

Dimmer Switch on Steering Post

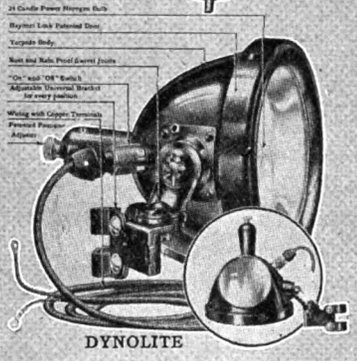
Dim at will, bright at will


Storage Battery

Regulator


Electric Side Lamps


Generator


DYNOLITE
The Perfect Ford Spotlight

Genolite Type C and D ▽ Constolite — Dynolite

Genolite *Type "C"* $29.85

An improved electric lighting system for lighting all five lamps, heads, sides and tail — gives brilliant light from storage battery in both side and tail lamps (which we furnish) irrespective of whether motor is running or idle. Provides also two nitrogen head-light bulbs lighted through patented regulating device which governs flow of current taken from magneto, giving more constant light at low engine speeds and can be dimmed at will at high speeds. Installed in two hours.

Genolite *Type "D"* $31.85

Includes the following — a storage battery — a generator with "cut out" which automatically charges the battery — two beautiful side lamps with bulbs — one high grade tail lamp with bulb — one high grade windshield spotlight with bulb — one coil box for automatically regulating spotlight — which also automatically dims headlight. Together with necessary wires, brackets — absolutely complete, ready for installation. No extras needed. Installed in two hours.

Dynolite $6.85

A powerful windshield spotlight designed exclusively for Ford cars. Cannot be excelled for the quality of material throughout, its many exclusive features and the exceptional power and brilliancy of its light. Operates off magneto through patented regulator which automatically delivers current at the proper voltage, keeping light constant in power irrespective of motor speed. Only two terminal connections to make installation.

Constolite $4.85

Gives a full driving light at practically all speeds — light in both head lamps at all times. Wired in multiple to prevent burning out — dimmer switch conveniently located on steering post — an exclusive feature found in no other device control. All wires, two extra bulbs, and dimmer switch provided. Installed in few minutes

DEALERS! This is the greatest sales producing accessory of the year. Write for particulars. Dept. G

Perfect Electric Lighting *for* Ford Cars

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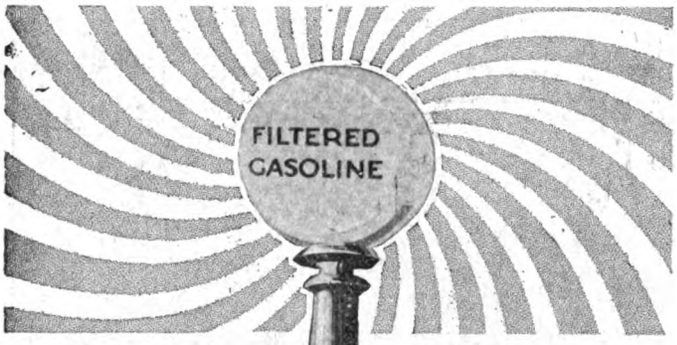
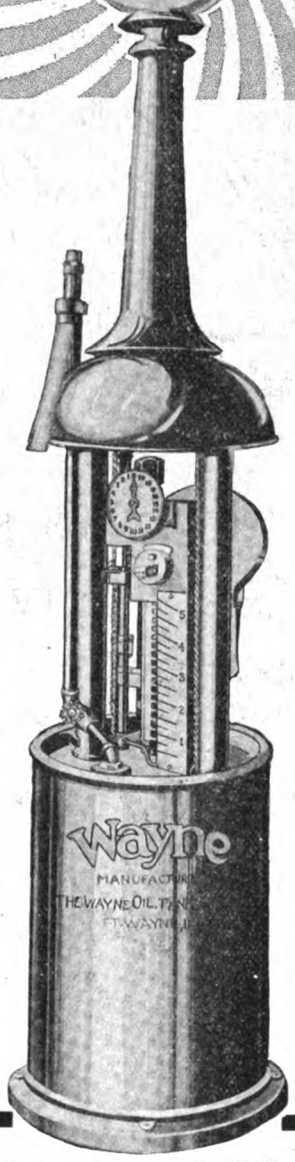


CONTINUOUS STROKE
No backward cranking.

SPEED,
20 gallons a minute.

BIG CLOCK DIAL
shows number gallons discharged.

PERFECT METER
positive drive operated by cog rack — sure—accurate.



CIRCULAR STEEL HOUSING
Weatherproof—doors telescope—counterbalanced.

SOLID BRASS VALVES
throughout.

CASTINGS,
all gray iron. All parts that come in contact with gasoline are galvanized.

The Magnet of Motordom

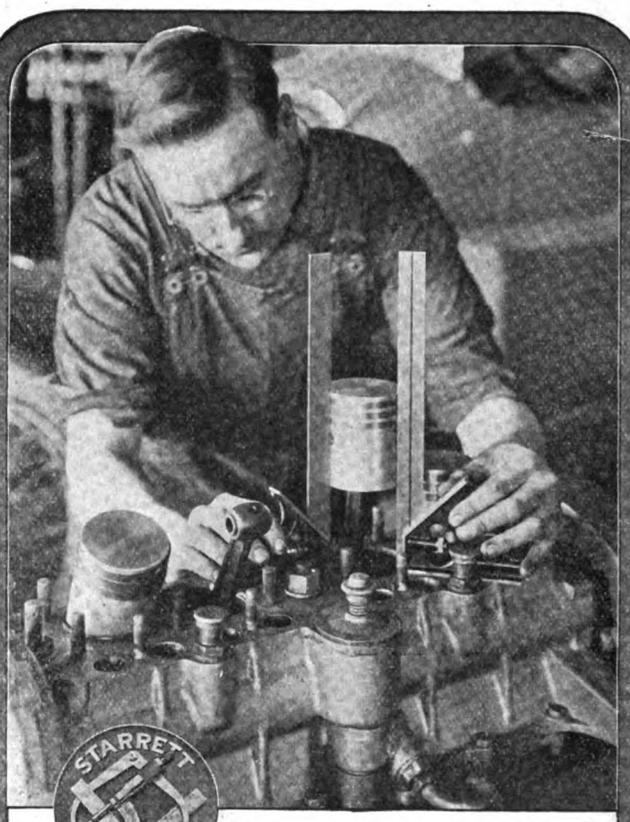
This big, handsome, WAYNE MONARCH—the magnet of motordom—at your curb will hold the trade you now enjoy and draw to your garage a full quota of the trade that now goes elsewhere, for there are thousands of motorists today who will buy "gas" from no other than

Wayne
Honest Measure Pumps

Wise dealers everywhere are rapidly installing these trade-holding, sales increasing, profit-multiplying outfits.

A post card addressed to us will bring you interesting descriptive literature and details. You'll find it worth while to get them. Write now.

WAYNE OIL TANK AND PUMP CO.
510 Canal Street, Fort Wayne, Ind.



Lining Up Pistons—

with a combination square is only one of the various uses for this instrument. In all repair work where accuracy is important, precision measuring instruments are essential in obtaining accurate results. Most manufacturers and machinists use

Starrett Tools
TRADE MARK
REG. U.S. PAT. OFF.

to aid them in maintaining accuracy. Every service station, garage, and machinist has need of some Starrett Tool.

Write for our free catalog No. 21 GT describing 2100 sizes and styles of precision measuring instruments, including rules, squares, levels, protractors, calipers and dividers, micrometers, vernier height gages, etc.

The L. S. Starrett Co.
The World's Greatest Toolmakers
ATHOL, MASS.

42-615

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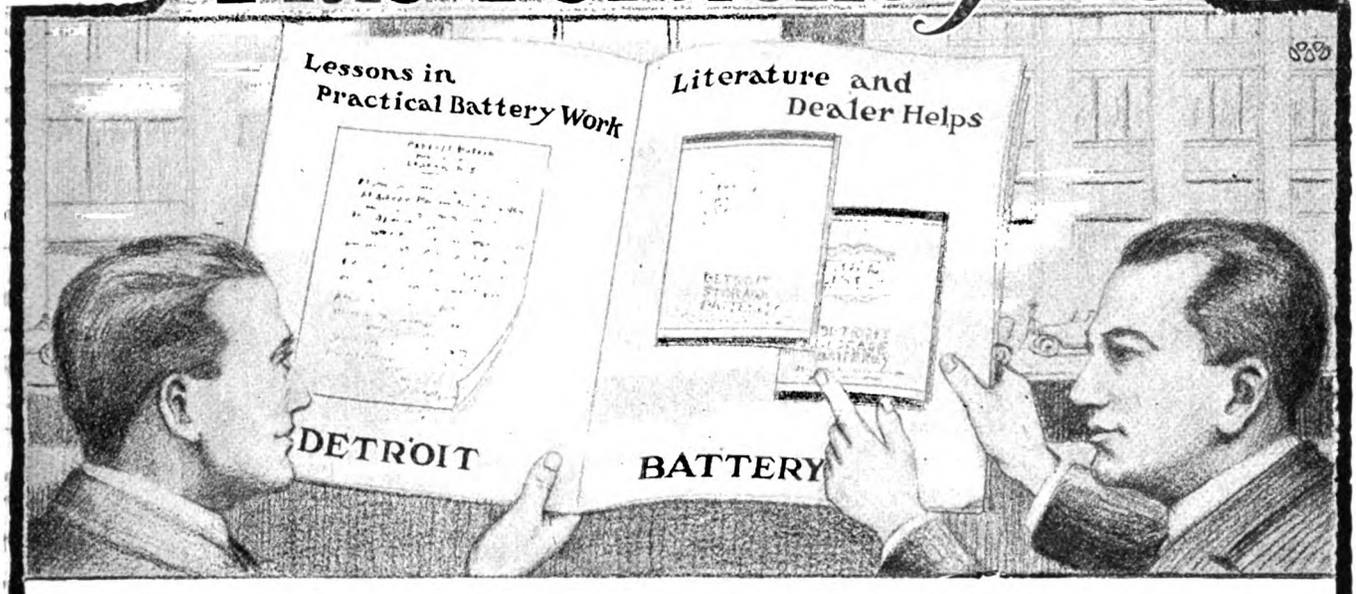
We Want to Send You This Portfolio free



This Proposition is Intended Only For Progressive Dealers

MEN who have made the most careful study of the motor car field say that the battery business is the most profitable and the fastest growing branch of the automobile and supply business. The business is still young in spite of its enormous volume. Motorists have only now come to recognize electric equipment as a positive necessity.

Scarcely half the cars running today have electric equipment. Two years from now over five million cars will be on the road *and* from eighty to ninety per cent will be electrically equipped. The battery business will be doubled or trebled. At least four million car owners will be buying batteries and service *again* and *again*. For, bear this important fact in mind: there are only two things on a car that are sure to wear out periodically—tires and batteries. This is what makes the battery business such a sure, safe-selling proposition.

We believe every progressive dealer should seriously consider entering the battery business now right at the beginning of its greatest growth. Few sections have enough good battery service stations. The business is sure. The profits are large.

The Detroit Battery Co. have a propositon for assisting any live, progressive dealer to enter the battery business, such as has never been made by any other battery concern. This large portfolio explains it fully.

Page 2 shows the big new Detroit Battery Plant that backs up the dealer and makes possible the shipment of orders and parts the day they are received.

Page 3 holds a specially dictated proposition to you—detailing exactly what will be necessary for you to do to enter the battery business in your particular locality—the expense and the probable profits.

Page 4 shows the equipment you will want to install and its cost.

Page 5 shows a sample of the course of lessons in practical battery work we give absolutely free to Detroit Battery men who have not had sufficient battery experience. We take the mystery out of the work. No Detroit Battery sales or service station will fail from lack of practical knowledge.

Pages 6 to 13 are devoted to displaying actual samples of our dealers helps sales and promotion plans—signs, catalogs, bulletins, direct advertising, etc.

Page 13 shows the simple office and accounting system we have had planned by an expert accountant for our dealers and service stations. You can see that our co-operation extends to points never before touched by any battery maker.

Page 14 shows a sample contract giving all details of our proposition.

By all means you ought to send for this portfolio at once. It may show you the way to a tremendous increase in business and profits.

DETROIT BATTERIES

Detroit Battery Company
Detroit, Michigan

Detroit Battery Company,
110 High Street, Detroit, Mich.

Send me the portfolio.

*Name*_____

*Address*_____

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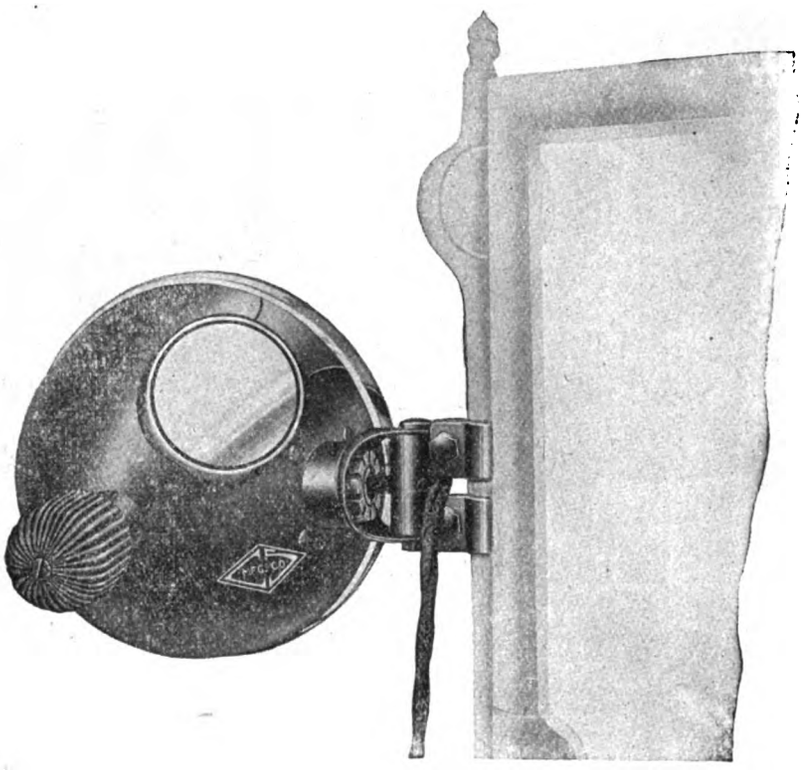
Giant Searchlight

—1917 MODEL—

List Price:

With Mirror $6

Without Mirror $5



The Year's Greatest Seller

The Culver-Stearns Giant Searchlight is the lowest priced lamp, quality considered, ever produced. It is not a luxury, but a necessity, and it adds to the appearance of any vehicle.

It is made to Culver-Stearns standards in design, material, workmanship, finish, and no better lamp can be manufactured. For utility, service and satisfaction it cannot be equalled. Its operation is the acme of simplicity and it is extremely enduring.

The Culver-Stearns Giant Searchlight sells at sight. It is bought by owners because of its obvious superiority, regardless of price.

The lamp shell is black enameled steel. The reflector is silver plated over nickel on brass. The lamp is perfectly balanced in the pressed steel bracket and will remain wherever placed. The handle operates a switch that is specially constructed, cannot fail, cannot be broken, and there is no button to break or lose. The lamps are Mazda C (gas filled) only.

The prices are right and the trade discounts are extremely liberal.

These are factors that make business and swing lamp sales to Culver-Stearns dealers everywhere.

Full trade information at request. The terms to the trade will surprise and interest you.

CULVER-STEARNS MFG. CO.

Main Office and Factory
Worcester, Mass.

Sales Office
Detroit, Mich.

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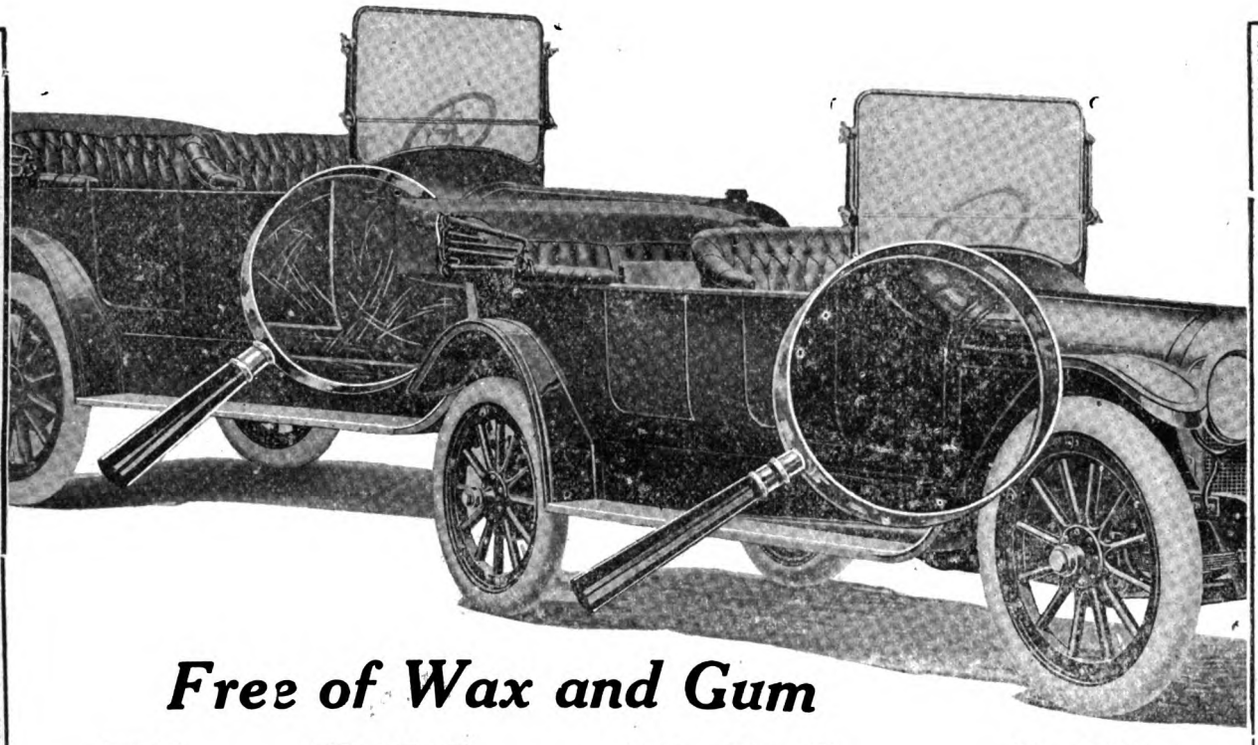

Free of Wax and Gum

Blue Ribbon Polish

Is a standard product. Its superior quality is known of by automobile owners the country over. Being free of wax or gum it cannot coat the finish of a car nor retain grit or other abrasives that would destroy appearance. It penetrates and revives the finish, restoring its lustre, and it cleanses and polishes with the one operation.

It's an ideal compound. The results are certain. Other polishes may be destructive and quality is questionable until it has been proven by long service experience.

The cost of material, production and overhead have increased through the year. The quality, price and discounts to the trade of all Blue Ribbon products are unchanged. The profits are positive. Blue Ribbon products cost no more than stock that is inferior and unknown.

Those who sell Blue Ribbon products benefit directly through our high quality and low prices. Being prepared in sealed containers and fully guaranteed the jobber, dealer and consumer are absolutely protected. When you stock Blue Ribbon products you can supply any demand.

This entails a very moderate investment. There is constant sale and satisfied customers will increase your business.

Have you listed Blue Ribbon products in your 1917 catalog?
If you do not know all about these specialties, write us today.

Blue Ribbon Specialties

- **Blue Ribbon Cream Metal Polish** For any metal.
- **Blue Ribbon Black Enamel** For Lamps, Hoods, Radiators and metal parts.
- **Blue Ribbon Leak Proof Cement** A Permanent Radiator Cement.
- **Blue Ribbon Cold Cream Hand Soap** Contains no pumice or sand.
- **Blue Ribbon Auto Body Gloss** For Automobiles and Furniture.
- **Blue Ribbon Nickel Polish** For Nickel Parts and Trimmings.
- **Blue Ribbon Auto Top and Seat Dressing** A Waterproof Dressing that restores Tops and Seats.
- **Blue Ribbon Oil Soap** A pure Vegetable Oil Soap for any purpose.

INTERNATIONAL METAL POLISH CO.

INDIANAPOLIS INDIANA

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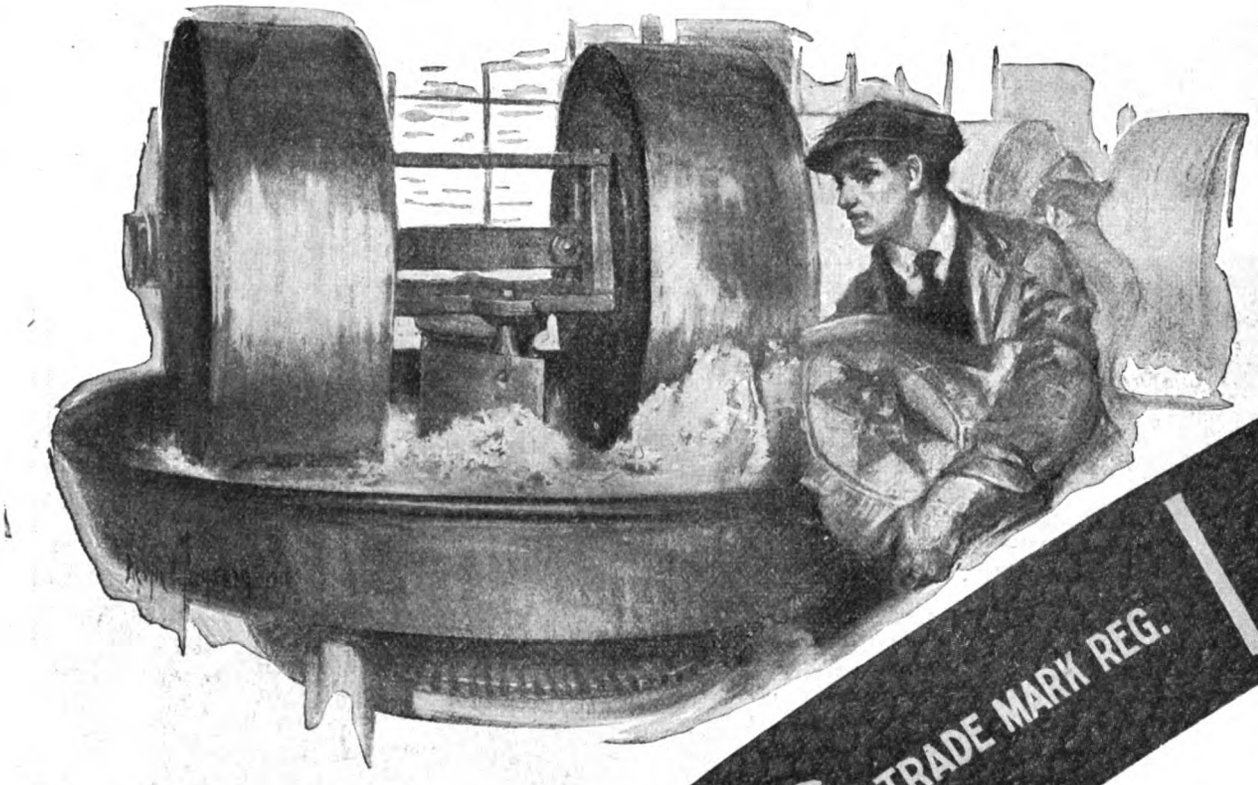

Crushing Asbestos Rock

MULTIBESTOS TRADE MARK REG.

The first step in the manufacture of Multibestos is the careful selection of long fibre asbestos. An extensive search of the world's markets has taught us that the mines of Canada offer the only grade of this rock suitable for a brake lining of such high quality.

After the selection is made and the shipments are passed upon by our experts the asbestos is delivered to our Walpole factory in carload quantities.

First comes the crushing process in which the crude material is pressed under heavy steel rollers. This crushing transforms the rock into a fluffy mass and from this mass the yarn is spun which forms the basis of the multiple weave of Multibestos.

The spinning process as well as the weaving and other methods of treatment will be set forth in subsequent advertisements.

The idea of this series will be to acquaint the trade with each step in the most thorough manufacturing policy known to the brake lining industry — a policy that is the big reason back of Multibestos supremacy.

STANDARD WOVEN FABRIC COMPANY
WALPOLE, MASS.

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VL VI. PAWTUCKET, R. I., FEBRUARY 1917. No. 10

Boston Displays 139 Different Makes of Cars.

1917 Exhibition the Most Comprehensive Ever Held in the United States.

Advance reports on the Boston Automobile Show indicate that this year's exhibition maintains the claim of the Boston Automobile Dealers' Association and the Boston Commercial Motor Vehicle Association, under whose auspices the show is held, that it is the greatest and most important display in this country, if not the entire world.

The show was opened with a total of 139 different makes on display, 89 of which were pleasure cars and 50 motor trucks and trailers and tractors. Four of the pleasure cars were electrics and two were steam cars. A new departure for Boston dealers was the Salon, held in the ball room of the Copley Plaza Hotel. In the following list of cars those displayed in Mechanics building and Horticultural hall are distinguished from those shown at the Salon:

Mechanics Bldg. and Horticultural Hall.

Abbott, American, Apperson, Allen, Auburn, Briscoe, Buick, Biddle, Cadillac, Chalmers, Case, Chandler, Chevrolet, Crow-Elkhart, Cole, Cunningham, Daniels, Davis, Dodge Brothers, Dort, Doble steam, Detroit electric, Elcar, Empire, Fiat, Ford, Franklin, Grant, Haynes, Hollier, Hudson, Hupmobile, Inter-State, Jackson, Jeffery, Jordan, King, KisselKar, Lexington, Lenox, Lozier, Locomobile, Liberty, Marion-Handley, McFarlan, Marmon, Maxwell, Metz, Mercer, Milburn electric, Mitchell, Monroe, Moon, Moline-Knight, National, Napoleon, Oakland, Oldsmobile, Overland, Owen Magnetic, Packard, Paige, Paterson, Pathfinder, Phianna, Pierce-Arrow, Premier, Pullman, Peerless, Reo, Roamer, Ross Eight, Saxon, Scripps-Booth, Simplex, Standard, Stanley steam, Stearns-Knight, Stutz, Studebaker, Westcott, White, Winton, Willys-Knight.

Automobile Salon.

McFarlan, Daniels, Brewster, Simplex, Chandler, Owen-Magnetic, Disbrow, Fiat, Rolls-Royce, Pathfinder, Franklin, Locomobile, Stearns-Knight, Pierce-Arrow, Phianna, Rauch & Lang electric, Jeffery, Mercer, Ohio electric, White, Marmon.

In the commercial car division these makes were on display:

Atlantic electric, Atlas, Atterbury, Autocar, Bethlehem, Brockway, Case, Farm Tractor, Cunningham, Denby, Duplex, Federal, F. W. D., Gramm-Bernstein, G. V., G. V. Mercedes, G. M. C., Holland Trailer, Hudford, Hurlburt, Indiana, International, Jeffery, Kelly-Springfield, Krebs, Locomobile, Longford, Metropolitan, Mack, Maxim, Menominee, Martin Rocking Tractor, Netco, Overland, Packard, Pierce-Arrow, Redden, Reo, Riker, Rush, Selden, Signal, Smith Form-A, Stewart, Studebaker, Transport, Troy Trailer, Vim, White, Wichita.

In the accessory divisions there were hundreds of devices on display, the majority of the well known names being represented by more than 170 separate exhibitors.

Graphically considered, the magnitude and scope of the Boston show is readily shown in the following figures:

Estimated value of exhibits	$2,000,000
Attendance for week	400,000
Cost of staging show	$75,000
Dealers and salesmen attending	5,000
Total number of machines shown	512
Accessary and equipment displays	170
Different makes of pleasure cars	89
Different makes trucks, trailers	50

Goodrich Earns $10,614,910

Earnings Smaller, but Gross Sales Much Larger Than in Year 1915.

The B. F. Goodrich Co., Akron, O., made net earnings in 1916 of $10,614,910, as compared with $13,058,648 in the year previous. The gross sales for the year totaled $70,990,782, as compared with $55,416,866 during 1915. The falling off in the net profit, as compared with last year, in the face of an increased volume of sales, is attributed to the enormous increase in the cost of materials and labor.

The profit and loss surplus at the end of the year was $14,919,888, after common dividends of $2,400,000 were paid, $700,000 in preferred stock canceled, $100,000 added to the pension fund and the deduction of $121,465 for the reduction of the preferred stock purchased from cost to par.

During the year $3,519,549 was spent on equipment and extensions to the plant.

The Standard Parts Corp. Buys Bock Bearing Co.

Negotiations Also Under Way for Purchase of Western Spring and Axle Company.

The Standard Parts Corp., which was recently formed through a merger of the Perfection Spring Co. and the Standard Welding Co., has purchased the Bock Bearing Co., Toledo, O., and is also negotiating for the purchase of the Western Spring and Axle Co.

The Bock Bearing Co. is capitalized at $1,650,000, of which $1,200,000 is common stock and $450,000 preferred, all of which is outstanding except $26,500 of the common stock. It is understood that 80 per cent. of the stockholders have agreed to dispose of their shares to the Standard company on a basis of $151.60 a share. Payment for the stock will be made with one-third in preferred stock of the purchasing company at $101.50; one-third in common stock of the Bock Bearing company and remainder in cash.

President William E. Bock of the Bearing company will become a director in the Standard Parts Corp. when the deal is completed. H. P. McIntosh, F. F. Prentiss, F. E. Borton and Maynard H. Murch will also become directors.

Production of bearings will be increased from 2000 sets to 10,000 sets daily. An announcement concerning the Western Co. is expected soon.

PIERCE-ARROW EARNINGS $4,000,000 IN 1916.

The earnings of the Pierce-Arrow Motor Car Corp., Buffalo, N. Y., amounted to $4,000,000 in 1916 after all depreciation charges were deducted. After allowing for eight per cent. dividends on the $10,000,000 prefered stock outstanding, the earnings are quivalent to $12.80 a share on the 250,000 shares of common stock of no par value.

Those earnings compare with $4,301,000 in 1915 and $1,714,000 during the previous 18 months period.

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Goodyear Makes Big Increase.

Tire Company Adds $10,000,000 to Its Capitalization—Part Already Sold.

The Goodyear Tire and Rubber Co., Akron, O., will increase its outstanding capitalization by the issue of about $10,000,000 in preferred and common stock. A total of $6,000,000 in preferred of the new issue has already been sold to bankers and the remainder will be offered as common stock to the present stockholders of the company on a basis of one share for each five shares held.

The company's capitalization is $50,000,000, divided into equal amounts of common and preferred stock, of which about $17,000,000 of each has been issued. President F. A. Seiberling says the additional capital is required to handle the enormous increase in the company's business, which this year, it is expected, will amount to more than $100,000,000 gross. Last year the gross was $63,950,000.

CHARLES E. FAY RESIGNS FROM FORD COMPANY.

Charles E. Fay, for the past 12 years with the Ford Motor Co. and lately the general manager of the big Ford assembly plant in Cambridge, Mass., resigned on March 1. It is understood Mr. Fay will take a rest of several months and will later engage in a new business enterprise the nature of which he has not announced.

Mr. Fay was one of the biggest factors in the motor trade of New England, having developed in that territory a sales organization as efficient as any in this country. The Boston establishment, which he brought to its present magnitude, is looked upon as one of the best and most ideal of all the Ford branches. Mr. Fay, when he first became identified with the sales of Ford cars, opened a sales room on Columbus avenue, where he maintained a force of about six persons. He gradually expanded and branched out to the point where the branch employed over 300 persons.

FISK RAISES TIRE PRICES 10 PER CENT.

The Fisk Tire and Rubber Co., Chicopee Falls, Mass., has announced an advance in tire prices of 10 per cent. This is the first announcement of an advance made by any of the tire companies since the first of the year, when several of the companies advanced prices from 10 to 15 per cent.

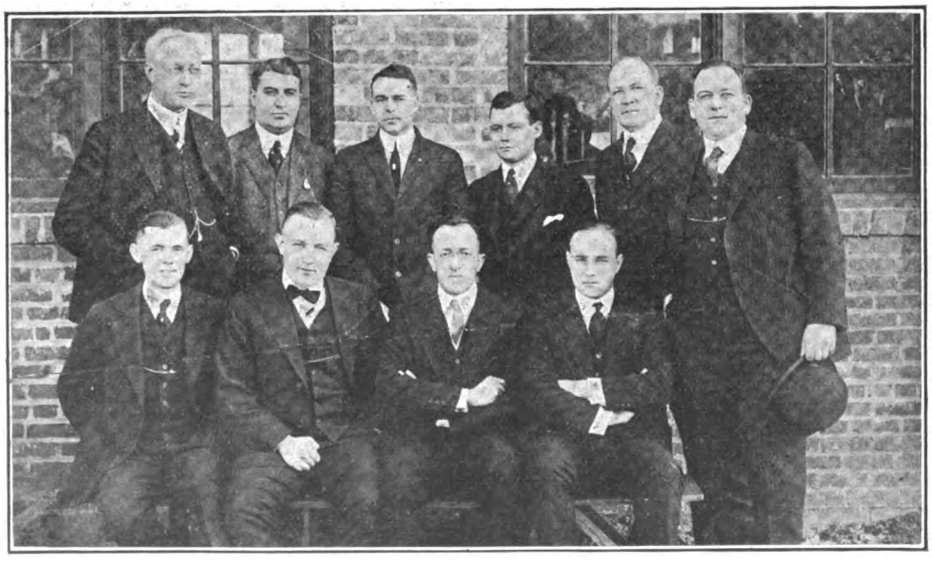
Marlin Absorbs Standard Bearing.

Arms Corporation Buys Up All Assets and Will Enter Upon Production.

The Marlin Arms Corp., New York, which was formed about 14 months ago with $3,500,000 preferred stock and 60,000 shares of common stock of no par value, has purchased all of the holdings and assets of the Standard Roller Bearing Co. for $2,000,000 in cash and 2000 shares of new common stock. Since the Marlin corporation was formed all its preferred shares have been retired from earnings and the new financing necessary will be provided for out of a sale of an issue of $1,500,000 six per cent. convertible notes to a syndicate of New York bankers and brokers.

FORD TRACTOR OF CANADA HAS $10,000,000 CAPITAL.

The Ford Motor Tractor Co. of Ontario, Canada, has been incorporated with a capital of $10,000 and will take over the business of the Ford Tractor Co., Inc., within the Dominion, including the patent rights for the Ford tractor. The company will maintain headquarters in Canada.



Sales Representatives of the Northwestern Chemical Co., Who Attended the Recent Business Meeting Held at the Company's Factory at Marietta, O.

Stutz Earned About $700,000.

Car Maker Closed Fiscal Year with Surplus of Approximately $2,500,000.

The Stutz Motor Car Co., Indianapolis, during the fiscal year ending Dec. 31 last, earned $649,042 net and had a surplus at the close of the year of $2,439,022. In 1915 the company's profits were $366,475.

The balance sheet of the company as of Dec. 31 is as follows:

Assets.		Liabilities.	
Fixed assets	$331,603	Payables..	$356,980
Good will..	2,100,000	Deposits..	17,700
Cash	74,060	Taxes...	8,500
Receivables	145,530	Reserves.	31,239
Inventory..	577,248	Surplus...	2,439,022
		Stock at.	5,375,000
Total....	$3,228,441	Total...	$3,228,441

J. H. FAW HAS SPECIAL OFFER FOR SUPPLY TRADE.

J. H. Faw, Inc., 41 Warren street, New York City, have prepared an assorted assortment of 16 different classes, including 300 numbers of 2788 pieces of standard accessories sold to the wholesale trade by their organization. It covers a complete retail stock of ignition and lighting supplies and also many items of special interest to owners of Fords, Overlands, Buicks and Dodge cars in wrenches and tools.

The retail value of the assortment is about $636 and it costs the dealer only $372. Further details about this unusual proposition for the retail trade will be sent upon application to the company.

DYNETO ELECTRIC CO. HAS BEEN REORGANIZED.

The Dyneto Electric Corp. has been incorporated under the laws of New York state with a paid-in capital of $500,000, and has taken over the business of the Dyneto Electric Co., manufacturer of electrical systems for automobiles.

The directors of the new corporation are: C. L. Amos, president; Jacob Amos, vice president; J. A. Bower, C. A. Chase, A. E. Doman, A. M. Hall, J. A. Mathews, G. A. Timmons, W. W. Wiard.

PRESIDENT OF REO FORMS TRACTOR CO.

Oldsmar, the new city which is being built at the head of Tampa Bay, Fla., by R. E. Olds, head of the Reo Motor Car Co., Lansing, Mich., will be the location of the new $1,000.000 tractor company that Mr. Olds is forming. The plant will employ 500 men.

H. H. BROOKS WITH SALES FORCE OF MARMON CO.

H. H. Brooks, formerly with the Marathon Motor Car Co., has been appointed assistant sales manager of the Nordyke & Marmon Company, Indianapolis, Ind.

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Dorris Enlarging Capital, Output.

Reorganized with $1,000,000 Capital and Elects New Board of Officers.

The Dorris Motor Car Co., St. Louis, Mo., has been reorganized with a capital of $1,000,000. Its capital stock was formerly $300,000, but it was found that this amount was inadequate to carry on the company's large business and provide for the expansion necessary to increase production.

The new officers of the company are: W. R. Colcord, president; G. P. Dorris, vice president; Webster Colburn, treasurer, and A. C. Schmid, secretary. The new directorate is made up of W. R. Colcord, F. C. Thompson, I. C. Muckermann, G. P. Dorris and Webster Colburn.

H. B. Krenning, the retiring president, still retains a large financial interest in the company.

PACKARD'S LINCOLN HIGHWAY SWEEPSTAKES.

President Alvan Macauley of the Packard Motor Car Co., Detroit, pressed a key at a special celebration at the factory on Washington's birthday, which gave a simultaneous signal in 16 states, extending clear across the country, inaugurating the Lincoln Highway Sweepstakes in which over 800 Packard dealers and salesmen are participating, including every individual in the Packard organization from the president to the newest junior salesman.

The competing dealers and salesmen earn merit in proportion to the sales they make from a special quota of new "2-25" and "2-35" Twin Sixes alloted to them by the factory. The race is run on a map representing the Lincoln Highway.

The race will continue until this allotment has been sold. The purpose of the contest is to build up an organization more than as a means of stimulating sales, and it was planned by the Packard carriage sales board as a means of getting a new measure of the ability of the selling forces.

President Macauley presides over the governing board. The other members are: C. R. Norton, general sales manager; George R. Burry, assistant general sales manager, judge of rules and eligibility; Henry Landsdale, manager of the carriage sales department, supervisor. A daily bulletin, called the "Packard Picric," is issued to record the progress of the contest.

H. L. McCLAREN ELECTED VICE PRESIDENT OF AJAX.

H. L. McClaren, one of the best known tire men in the business, has been elected a vice president of the Ajax Rubber Co., Inc., of New York, and will have full charge of marketing the company's product, as well as that of the Racine Rubber Co., which was recently acquired by Ajax.

At a recent meeting of the Ajax company it was announced that the net profits of the combined companies for the year ending Dec. 31, 1916, aggregated $1,268,311, which is equivalent to $9 per share on the outstanding capitalization.

The board of directors, of which Horace De Lisser is chairman, was increased from nine to 15 by the election of the following new members, who represent the Racine interests: L. B. Patterson, H. L. McClaren, L. T. Vance, H. C. Severence, Stuart Webster and Joseph Weissenbach.

Pennsylvania's Annual Election.

Officers and Directors for New Year Are Appointed and Dividends Declared.

The annual meeting of the stockholders of the Pennsylvania Rubber Co., Inc., was held at Jeanette, Penn., on Feb. 19, at which the following directors and officers were elected. Directors—Herbert DuPuy, H. Wilfred DuPuy, Charles M. DuPuy, Seneca G. Lewis, George W. Shively, G. A. McLaughlin. Officers—Herbert DuPuy, chairman of the board; H. Wilfred DuPuy, president and treasurer; Charles M. DuPuy, vice president; Seneca G. Lewis, general manager; Geo. W. Shiveley, secretary; Charles G. Morrill, assistant treasurer.

The directors declared a quarterly dividend of 1¾ per cent. on the preferred and 1½ per cent. on the common stock, payable March 31 to stockholders of record March 15.

Wisconsin Triples Its Capitalization.

Plans Have Been Laid for Expansion of Business to an Increase of 75 Per Cent.

The Wisconsin Motor Mfg. Co., Milwaukee, Wis., through the declaration of a stock dividend of 100 per cent., has increased its capital from $350,000 to $1,000,000. The capitalization is divided into $700,000 of common stock and $300,000 of seven per cent. preferred stock.

Plans have been completed for the expansion of the company's plant at 47th avenue and Burnham streets, which allow of an increase in production of from 50 to 75 per cent.

NEW YORK AUTO DEALERS HOLD ANNUAL ELECTION.

At a meeting of the Board of Directors of the New York Automobile Dealers' Association the following officers were elected for the ensuing year: Charles M. Brown of the Winton Co., president; William C. Poertner of the Poertner Motor Car Co., vice president; William Parkinson of the Stutz Motor Car Co., secretary and treasurer, and Charles A. Stewart, general manager. R. H. Johnston, the retiring president, was given a vote of thanks.

The new directors are as follows:

E. S. Hare, Packard Motor Car Co.; Charles M. Brown, Winton; Harry L. Stratton, Colt-Stratton Co.; William C. Poertner, Poertner Motor Car Co.; R. R. Johnston, White Co.; S. de B. Keim, Locomobile Co. of America; William Parkinson, Stutz Motor Car Co.; Frank O. Carrie, Marmon N. Y. Co.; Walter T. Savoy, Autocar; John F. Plummer, Colonial Motors, Inc.

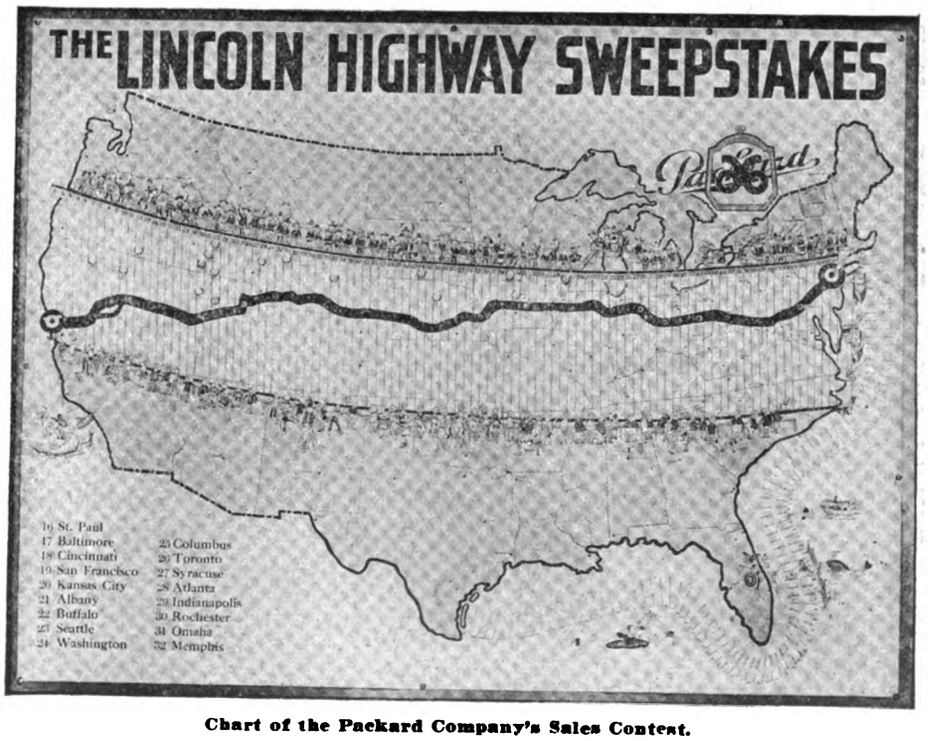

Chart of the Packard Company's Sales Contest.

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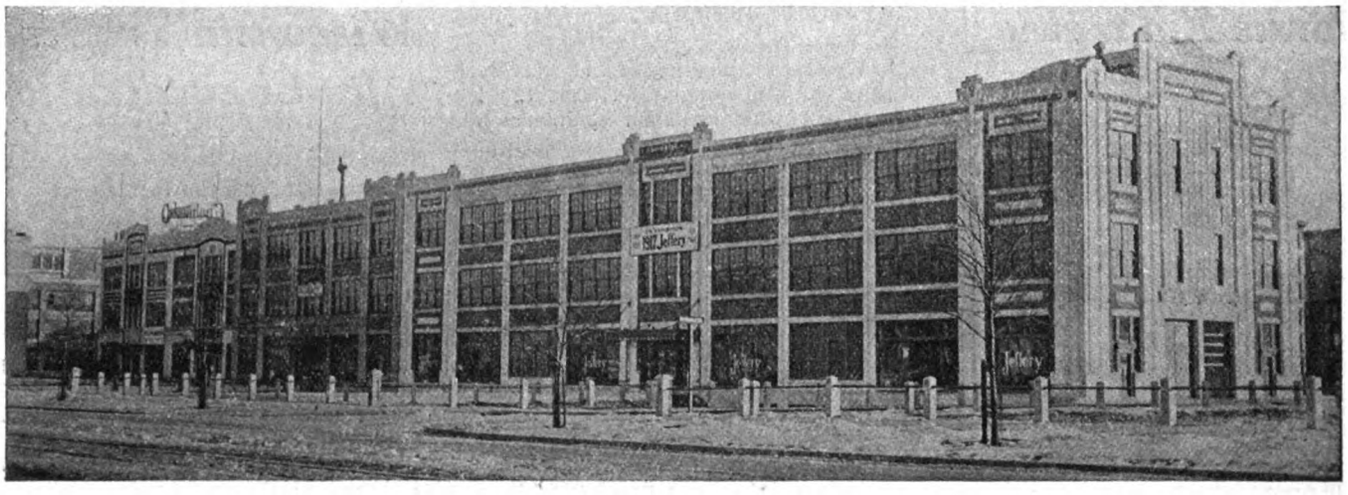

Most Beautiful Automobile Buildings in the Country, on Commonwealth Avenue, Boston, Where Jeffery, Studebaker and Chalmers Cars Are Sold.

New England Supreme As a Motor Car Market

Boston Show Demonstrates That This Section Absorbs More Motor Cars and Accessories Than Any Other Like Territory In the World

THE Boston Automobile Show, if taken to include the exhibition of cars in the Mechanics' building, Horticultural Hall and the Automobile Salon at the Copley-Plaza Hotel, is more comprehensive and greater in point of numbers and other features than any other similar exhibition held throughout the entire world.

Over 90 different makes of pleasure cars and 49 makes of commercial vehicles were scheduled to be shown, with a total of 512 individual machines. The accessory exhibitors reached an approximate total of 170.

In New England is found the greatest concentration of wealth of like section in the world, which fact is shown in the income tax returns from that section for June 30, 1916, which were as follows:

	Corporation	Individual
Maine	$320,841.32	$193,181.93
New Hampshire	103,162.65	101,777.92
Vermont	83,533.01	259,470.85
Massachusetts..	2,668,189.60	4,193,828.30
Rhode Island...	416,816.44	686,626.04
Connecticut	1,275,389.68	1,446,218.16
Totals.....	$4,867,932.70	$6,881,103.20

The total income tax paid is $11,749,035.90, which compares with $124,916,315.51, the total for the whole of the United States, or 9.5 per cent. of the entire amount collected in the country. This is in spite of the fact that New England has only 6.8 per cent. of the population.

Chester I. Campbell, Secretary of Boston Automobile Dealers' Association and Manager of Boston Show, Which Is Conducted by the Association.

In total wealth, as indicated through assessed valuations, New England's position shows up even stronger, as will be seen by the following table:

	United States	New England
Assessed val...	$70,789,755,451	$7,599,586,847
Area sq. miles.	3,026,789	66,426
Population.....	101,882,479	6,962,109
Cars reg., aprox.	3,000,000	300,000

The reason and proof of New England's leading position as a motor car market are plainly indicated by the above figures. With less than two per cent. of the total area of the country it has nearly one-tenth of all the wealth, and its citizens own one-tenth, approxi-

J. H. MacAlman, President of the Boston Automobile Dealers' Association and Distributor of Stearns-Knights, and His Boston Headquarters.

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New England Home of Marmon Cars and F. E. Wing, Exclusive Distributor.

mately, of all the cars registered in the United States. Herein is also found an ideal condition for marketing automobiles and supplies.

Theoretically, the proof that New England should be the ideal motor market has been established, and it is found in the actual motor car business accomplished, which is estimated at over $100,000,000 during 1916. The dealers in and about "Five-Points," which is where Commonwealth and Beacon avenues branch out, sold over $20,000,000 worth of cars and accessories in the past season, and this big volume of sales was alone done by those distributors located within a radius of three-quarters of a mile of the corner and does not include the many other dealers in Boston and other cities in the New England states.

The volume of this distribution in this section for the past three years is shown in the following compilation of registration statistics from the different New England states:

	1916	1915	1914
Maine	28,981	21,539	16,028
New Hampshire	17,508	14,915	10,596
Vermont	15,999	10,895	8,254
Massachusetts	136,809	102,633	77,246
Rhode Island	21,406	16,362	13,058
Connecticut	56,048	38,721	29,371
Totals	276,751	205,065	154,553

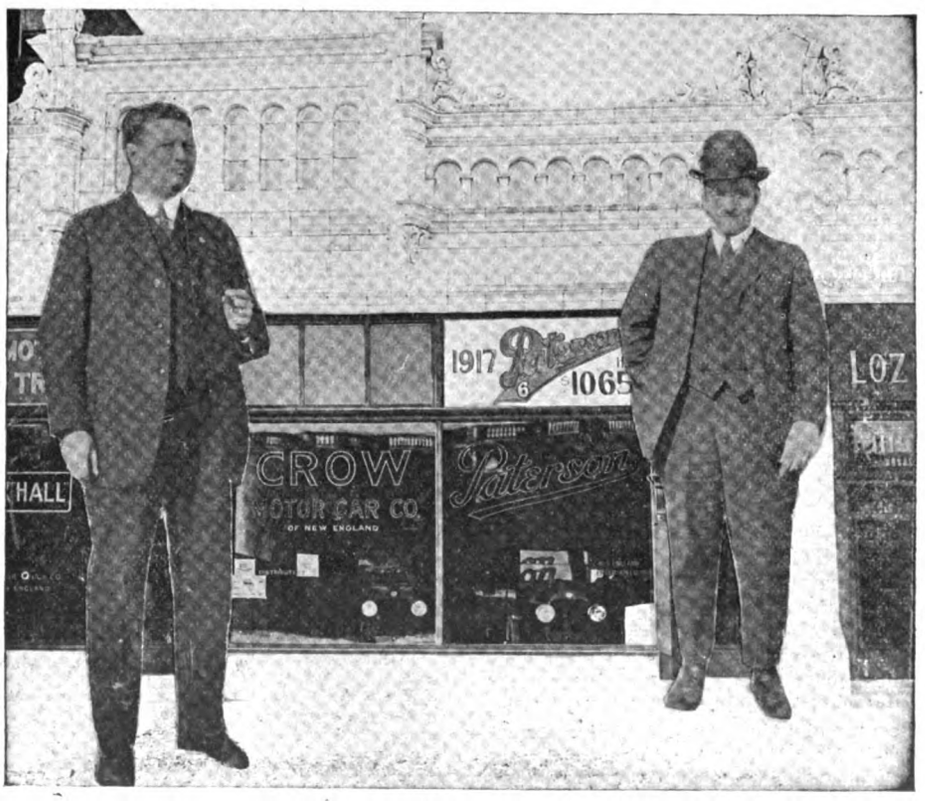
While these figures do not show the exact distribution over the periods covered, they are as accurate as are obtainable and show that the sales were about 50,000 more cars in 1915 as compared with 1914, and about 70,000 more in 1916 as compared with 1915.

In a closer analysis showing individual distribution in this territory, it is found that it is a market for high class cars all out of proportion to its population. The Packard, Cadillac and Marmon companies distribute, on the average, about 12 per cent. of their total outputs in New England. It is claimed that the sales of Studebaker cars in New England increased nearly 70 per cent. in 1916, as compared with the previous year, and the Cadillac distribution increased about half that total in the same time.

Alfred H. Sowers, Treasurer and Manager Jackson Motor Car Co., Boston.

Naturally, following this great flood of motor cars, the business of distributing, repairing and selling accessories has developed on a large scale and at present there are nearly 4000 different firms in New England engaged in one or another of the branches of the automobile busi-

Harry Fosdick, Pathfinder Agent and Member of Dealers' Association.



S. A. S. Strahan of Dimond & Strahan, Distributors of Crow Cars in New England, and George H. Russell of the Paterson New England Agency.

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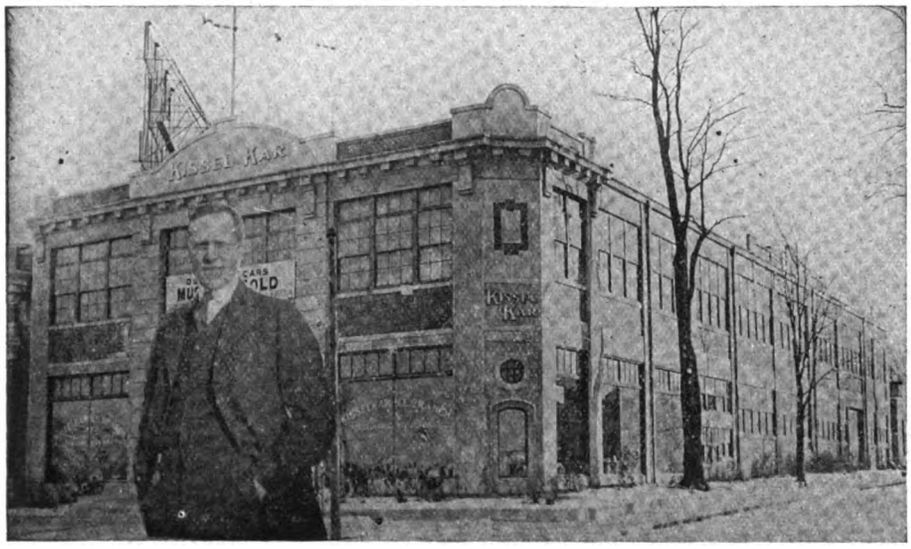

Kissel Kars New England Factory Branch and C. H. McCausland, Manager.

there were 25,351 manufacturing establishments in New England, employing 1,101,290 people, and with an annual output of goods to the value of $2,670,065,114, of which $1,193,768,236 represented the increase in value through manufacture. This product had a per capita valuation at that time of $480, as compared with $225, the per capita valuation of the entire product of the United States. New England's production is 12 per cent. of the total in the United States.

Another great factor in New England's development as an automobile market has been the steady and constant improvement of its highways. Within this comparatively small area of 66,426 miles there is a system comprising 86,718 miles of roads of which more than 18,000 miles are treated with modern surfaces. This web of roads connects up nearly 439 towns and cities ranking in population from 1000 to 750,000. In 1914, $15,435,746 was spent on improvements and in maintaining this system, and even larger sums have been spent in this work during each of the past two years.

F. A. Hinchcliffe, Jordan Car, Treasurer Boston Dealers' Assn.

J. W. Maguire, Pierce-Arrow, Director Boston Dealers' Assn.

J. W. Bowman, Daniels Car, Director Boston Dealers' Assn.

P. S. Aultman, Kelly-Springfield, Director Boston Motor V. Assn.

E. Day Baker, Hurlburt Truck, Treasurer Boston Motor Vehicle Assn.

ness. The nature and location of their business is shown in the following table:

	Makers Dealers	Garages	Repair Shops	Supply Dealers
Maine	186	197	56	30
N. Hampshire	77	166	30	22
Vermont	90	111	23	11
Massachusetts	493	741	207	343
Rhode Island.	58	124	55	36
Connecticut ..	253	255	124	140
Total.....	1097	1594	495	582
Grand total.....				2768

The prosperity of these dealers is assured by the prosperous and flourishing condition of industry within their territory. Of the $5,088,587,293 held in the savings banks of the United States at the close of 1916 by 11,148,392 depositors, $1,659,708,030 was held by 3,782,827 depositors in New England. This sum is more than 50 per cent. greater than the total monetary value of the output of the automobile industry in America for 1916 and does not include the vast sums held in trust companies, private banking institutions and postal savings banks in that territory. The annual volume of all kinds of business in New England is indicated by the bank clearings in the city of Boston for 1916. These totaled $10,180,120,000, which is 1000 per cent. more than the total volume of business in the entire automobile industry of the country.

The last Federal census showed that

Boston Branch of the Winton Company and Its Manager, F. R. Stockbridge.

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Elgin Six Dealers from All Parts of the Country Who Were Banqueted by the Elgin Motor Car Corp., in the Gold Room of Kaiserhof Hotel During the Chicago Show.

Activities of Prominent Men of the Industry

Resignations, Promotions and Other Changes in Personnel of Motor Vehicle Manufacturing and Merchandising Companies and Allied Businesses.

Claude C. Ostrom, purchasing agent of the Locomobile Co. of America, Bridgeport, Conn., has resigned to become associated with the Parish Mfg. Co. of Reading, Penn., and Detroit, Mich., with headquarters at the latter city. Before joining the Locomobile company Mr. Ostrom was connected with the Midvale Steel Co.

H. W. Hayden, formerly general manager of the Pullman Motor Car Co., York, Penn., has resigned his connection with the company, his position having been abolished by the receivers that now have charge of the property.

J. S. Josephs, who was formerly treasurer of the F. I. A. T. company, and who now has charge of the factory at Poughkeepsie, says it is the intention of the company to enlarge the factory to produce a car to sell at about $2000 and also to make an aeroplane engine.

George G. Weidner, manager of the Philadelphia branch of the Stewart Warner Speedometer Corp., has resigned and will become associated with the Benford Mfg. Co., Mt. Vernon, N. Y.

Robert C. Enos has been appointed sales manager of the Torbensen Axle Co., Cleveland, O. He was formerly with the American Distributing Co.

Henry F. Campbell has resigned as secretary-treasurer of the Stutz Motor Car Co. of Indianapolis and has been succeeded by William B. Thompson, formerly sales manager of the company. Mr. Campbell retains his financial interest in the company.

William H. Bennett, formerly advertising manager of the Searchlight Co., Chicago, has become associated with the Service Motor Supply Co. in an advertising capacity.

Spencer Weart, formerly secretary of the Bound Brook Oilless Bearing Co., Bound Brook, N. J., has been elected president of the company, and George Smalley has been elected first vice president, director and general manager. Following the change in the board of officers, W. F. Jennings was made eastern sales manager, H. J. Lindsey western sales manager and A. K. Smith production manager.

J. E. Forgy, assistant purchasing agent of the Locomobile Co. of America, Bridgeport, Conn., has been appointed purchasing agent to succeed Claude C. Ostrom, who has resigned.

Percy Martin, a well known engineer, who was engaged in the automobile business in this country for many years, has been appointed engine controller of the British Empire and a member of the Imperial Air Board.

E. J. Lang, sales manager of the Baker R. & L. Co., has resigned and will engage in the manufacture of automobile bodies. Mr. Lang is a son of Charles E. J. Lang, founder of the Rauch & Lang Carriage Co.

F. W. Boynton has been appointed purchasing manager of the Packard Motor Car Co.

R. M. Anderson has been appointed research engineer of the Packard Motor Car Co., and Frank Wahl has been named as his assistant.

E. B. Bikle, assistant secretary and treasurer and office manager of the Lycoming Foundry and Machine Co., Williamsport, Penn., died on Jan. 28. His successor will be appointed at the next meeting of the board of directors.

B. G. Appleby was elected president of the Erd Motor Co. at the annual election held in Saginaw, Mich. The other officers elected are: J. G. Erd, vice president; H. S. Erd, secretary; A. W. Seeley, treasurer and manager. These officers and the following constitute the board of directors: O. L. Dittmar, C. F. Beach, M. J. Passolt, R. Knapp.

Leroy Eschner has organized the Eschner Motor Co., and will take over the business of the Winton agency in St. Paul, Minn., and will also sell a medium priced car in that city.

J. B. Hulett, formerly assistant sales manager of the Chandler Motor Car Co., Cleveland, O., has been elected vice president and general manager of the Brady-Murray Motors Corp., Chandler distributors, at Grand Rapids, Mich.

Eugene E. Neville has been appointed sales manager of the Becker Motor Car Co., Grand Rapids, Mich., and G. A. Steketee becomes his assistant.

Ralph S. Allen, recently representative of the Wagner Electric Mfg. Co., in Michigan and formerly connected with the Dayton Electrical Laboratories, has been appointed district manager of the Gould Storage Battery Co. at Detroit.

Edward W. Wise, formerly purchasing agent for the Toledo Rubber Co., has established a supply business in Toledo, O., handling the Kellogg pump, Boyce motometers and other accessories.

George M. Graham, formerly with the Willys-Overland Co., has joined the sales organization of the Pierce-Arrow Motor Car Co. of Buffalo, N. Y.

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Nellie M. Scott has been elected president of the Bantam Anti-Friction Co., Bantam, Conn., to succeed W. S. Rogers, who has resigned. Miss Scott has been secretary and treasurer of the company for a number of years. Ruth Edwards has been elected treasurer and C. B. Heath secretary. Henry Edwards has been elected vice president of the company to succeed L. J. Nickerson, who has resigned. S. A. Strickland, mechanical and sales engineer, has resigned.

F. N. G. Kranich Department Manager of Hyatt Roller Bearing Co.

W. O. Allen, General Manager of the Allen Motor Co.

Jerry W. DeCou has been appointed general factory manager for the Smith Form-a-Truck Co., of Chicago. He was formerly factory manager of the Thomas B. Jeffery Co., Kenosha, Wis.

Paul Arthur has been appointed mechanical engineer of the Simms Magneto Co., East Orange, N. J. He held a similar position with the J. O. Heinze Co., Springfield, O.

E. G. Scott, who has been identified in the past with the Kissel and Packard selling organizations, has become connected with the Kentucky Wagon Works, Louisville, Ky.

L. C. Parrott has been appointed purchasing agent of the Otis Steel Co., Cleveland, O. For the past four years he has been assistant purchasing agent for the Standard Welding Co.

Carroll W. Prochaska, who was formerly president of the Whalen Engineering Co., has been appointed assistant sales manager of the Holt-Welles Co., Inc., New York City, agents for the Branford carburetor.

W. A. Bryan has been appointed master mechanic of the Firestone Tire and Rubber Co., Akron, O. He was formerly superintendent of the Akron plant of the International Harvester Corp. and was foreman of tool designing for the Diamond Match Co. prior to his connection with the International company.

Edwin E. Russel has succeeded F. R. Pettit as purchasing agent of the J. I. Case Threshing Machine Co. Mr. Pettit has become president of the J. I. Case Plow works.

David W. Henry is organizing a million dollar corporation to manufacture a commercial vehicle using the four-wheel drive system.

W. A. Avery, one of the best known jobbers in automobile supplies on the Pacific Coast, died in Los Angeles on Feb. 5. He was one of the original incorporators of the firm of Chanslor & Lyon, which was organized over 12 years ago. He was head of the Seattle branch of the company.

Julian H. Schermerhorn has been elected vice president of the Joseph Dixon Crucible Co., Jersey City. The position of treasurer, which has become vacant by his promotion, has been filled by the appointment of William Koester, who has been head of the credit department of the company.

R. D. Northrup has become associated with the Greenleaf Advertising Co. of Boston, Mass. He will continue to handle the advertising of the Standard Woven Fabric Co., with which he has been connected since it was started.

Harold W. Davis, formerly manager of the Laidlaw Co., has been appointed manager of the auto fabric department of the W. H. Duval Co., New York City.

N. G. Kranich has joined the Hyatt Roller Bearing Co., Chicago, Ill., in charge of a new special department, which will handle the sales and application of Hyatt bearings to farm machinery. Mr. Kranich will also be on the engineering staff.

W. B. Cochran has been appointed manager of the San Francisco branch of the General Motors Truck Co., Pontiac, Mich., and will have charge of the California and Nevada territory. Mr. Cochran has had considerable experience on the Pacific Coast, where he has handled both the Haynes and Cole cars.

John A. White, for eight years manager of the Chicago office of the United States Light and Heat Corp., Niagara Falls, N. Y., has been appointed sales manager of the battery division of the company. W. W. Halsey has been appointed manager of the New York office of the company.

Harry Unwin, for many years in the motor industry, has organized a company of his own to distribute King cars. The new concern will be located at 1224 Bedford avenue, Brooklyn, N. Y., and will be known as Harry Unwin, Inc.

Perry McGillivray, former champion swimmer, has joined the selling force of the Centuar Motor Co., Jeffery agent, Chicago, Ill., and will engage in the sale of trucks.

Gathering of Chalmers Dealers and Factory Men in Congress Hotel, Chicago, Where They Ceased Show Business Long Enough to Indulge in a Sumptuous Banquet.

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A. B. Willeman has resigned as superintendent of purchases for the Briscoe Motor Corp., Jackson, Mich.

J. N. O'Brecht has been elected president of the Pallau Steel Spring Co., Mount Clemens, Mich. The other officers of the company are: Vice president, A. T. Donaldson; secretary, P. J. Ulrich, and treasurer, A. Marlette.

C. I. Hansen has assumed his duties as purchasing agent for the Haynes Automobile Co., Kokomo, Ind. He was formerly of the purchasing department of the Mitchell-Lewis Motor Co. Mr. Hansen succeeds C. H. Landsottel.

W. R. Rood has resigned as vice president of F. S. Carr & Co., Boston. Mr. Rood has been the active sales manager of the organization for the last eight years.

A. C. Phillips, formerly with the C. T. Silver Motor Co., New York City, will manage the Brooklyn branch recently established by the P. J. Durham Co. of New York, distributor of the Gray & Davis products.

S. D. Briggs, Minneapolis, Northwestern representative for the Hupmobile, has sailed for a tour of England, France and Spain in the interests of the factory. He intends to be away four months.

H. L. Kepler has been appointed purchasing agent of the Briscoe Motor Corp., Jackson, Mich. Mr. Kepler was formerly assistant purchasing agent for the Chalmers Motor Co.

F. N. Hammond, formerly branch manager for the Goodyear Tire and Rubber Co., is now branch manager at Cleveland, to succeed R. S. Hartsell. Mr. Hartsell has been placed in charge of makers' business in Cleveland.

Hugh C. Dunning, factory manager, and Fred Corbeille, assistant superintendent of the Chevrolet Motor Co., have resigned to accept positions with the Stephens motor branch of the Moline Plow Co., at Freeport. Ill.

S. W. Mills has joined the force of the Highway Tractor Co. at Indianapolis. Mr. Mills was formerly an engineer for the Fiat Co.

John C. Hay, Jr., vice president of the Maxwell Motor Co., has resigned. He recently resigned as chairman of the board of directors to become vice president.

Allan R. Pye, who has been associated for the past 10 years with the Britton Co., Hartford, Conn., has been elected vice president of the company and is also manager of the Federal truck department. Charles Helm, who has been with the company 11 years and who is manager of the tire department, was made secretary.

Snow Williams has become sales manager of the Chicago branch of the Maxwell Motor Sales Corp. He was assistant general manager of the firm of Harry Newman, Inc.

E. L. Cousino is now sales manager of the Grasser Motor Co., Toledo, O. He was formerly associated with the Willys-Overland Co., in charge of the car exchange department.

Charles D. Hastings, who has been associated with the Hupp Motor Car Corp., Detroit, since its inception, except for two years, has recently returned to the corporation and is now vice president and general manager.

L. Barnabas is the new motor truck factory branch manager for the International Harvester Co. at St. Louis, Mo., with headquarters at 3116 Locust street. H. A. Frick is now in charge of the I. H. C. branch at Chicago. He was formerly manager of four-cylinder sales and service for the company at Philadelphia.

W. L. Batt has been appointed sales manager of the Hess-Bright Mfg. Co. He will have entire charge of sales of the company. Mr. Batt has been with the firm since its early days.

Charles T. Bird, for the past year connected with Mott Sand Blast Co., has again become associated with Pangborn Corp., Hagerstown, Md., sand specialists, as vice president and works manager in charge of engineering and production.

W. J. La Casse, who has been assistant supervisor on the Pacific Coast for the Maxwell Motor Sales Corp., has been appointed director of sales for the company in Washington, Oregon and Idaho.

Carl Kaufman has become general manager of the Auto Hardware and Equipment Co., New York. The company is a large jobber.

F. M. McGrew has resigned as general manager of the Napoleon Auto Mfg. Co., Napoleon, O.

L. G. Peed, manager of the Philadelphia branch of the Maxwell Motor Sales Corp., has resigned to join the staff of the Willys-Overland Co., in New York.

H. E. Freeman has been appointed treasurer of the Robbins & Meyers Co., maker of electric motors, generators and fans. He was formerly vice president of the American Trust and Savings Bank, Springfield, O.

W. H. H. Hutton, Jr., has been made director of purchases for the Timken Axle Co., Detroit.

H. M. Fletcher, formerly district manager of the Maxwell Motor Co., Inc., Detroit, has become the district representative in the Southwest for the Mitchell Motor Car Co. of Racine, Wis.

C. E. Darland has been appointed general manager of the Tulsa Automobile Co., Tulsa, Okla. W. A. King has been made factory and production manager.

Fred A. Snow, for five years chief metallurgist of the Thomas B. Jeffery Co., Kenosha, Wis., and its successor, the Nash Motors Co., has resigned to engage in business and will establish a commercial heat treating plant in Chicago.

P. L. Emerson is now sales manager of the Olds Motor Works, taking the position left vacant since the resignation of Jay Hall last July. Mr. Emerson was the organizer of territorial divisions for the Racine-Statley Co., manufacturer of agriculture implements and vehicles, and also for the John Deere Plow Co.

F. F. Beall, vice president of manufacturing of the Packard Motor Car Co., Detroit, has announced the appointment of E. F. Roberts as factory manager and that of C. F. Tollzien as manager of production. These two positions were created to increase the efficiency of the general organization, Mr. Roberts having been promoted from general superintendent and Mr. Tollzien from the position of purchasing agent.

H. L. McClaren has been elected president of the Racine Rubber Co., which was recently formed by the Ajax Rubber Co. of Trenton, N. J. Mr. McClaren was formerly head of the Racine company when it was owned by the Mitchell Lewis Motor Co., of which he was president. He succeeds Stuart Webster, who will continue as treasurer and director of the company.

H. T. Ewald has been elected president of the Campbell-Ewald Co. to succeed Mr. Campbell and C. A. Sloan was elected vice president. G. C. Brown is secretary and treasurer of the company.

H. L. Innes has been appointed factory manager of the Chevrolet Motor Co., Flint, Mich. He was formerly with the Dodge Brothers.

H. R. Williams, formerly with the Chanslor and Lyons Co., Seattle, Wash., has been appointed sales engineer and manager in charge of the factory equipment business of the Klaxon Co., at the Detroit office.

H. A. C. Fay, New England district manager of the Service Recorder Co., Cleveland, O., has been appointed general manager of the Frank G. Robbins, Inc., Hartford, Conn., distributors for Saxon cars, the Autocar and Avery plows. Mr. Fay will retain his connection with the Recorder company and will have his headquarters at Hartford.

C. C. Barley, president of the Indiana Truck Corp., who was the principal speaker at a banquet which was attended by the company's officials and dealers, stated that it was possible to quadruple the earning power of heavy duty trucks through speeding up in loading and discharging.

Harry A. Stevenson, one of the most prominent automobile men in the automobile field, has joined the staff of the Michigan State Auto School, Detroit. He has been connected with the automobile business for the past 12 years, seven of which were with the Detroit Electric. He was also special representative for Walter W. Flanders.

R. E. Bertch has been appointed manager of the United Motor Supply Co., Black Hawk County, Waterloo, Ia.

George Rush has joined the Gibson-Overland Co., Lafayette, Ind. He is a prominent man in the local taxi business.

T. M. Blossat, Jr., has been appointed sales manager for the Demack Motor Car Co., New Orleans, La., distributor for Overland and Willys-Knight cars.

O. O. Dice has been appointed sales manager of the Cuyler Lee organization of San Francisco, Cal., handling Maxwell sales.

S. E. Comstock has become general manager for Thomas J. Doyle, Dodge agent, Detroit, Mich. He has been associated with the automobile industry for the past 12 years.

George B. Harr, distributor for the Maxwell car, has appointed several sub agents. Stone & Brandstatter will handle the agency in Pecatonica, Howard Early at Harrison and W. Krestzburg and Earl Alex in New Milford and Byron townships.

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The Firestone Tire and Rubber Co.'s New Branch in Los Angeles, Cal.

HAPPENINGS AMONG THE CAR AND PARTS MAKERS.

What Several of the Leading Manufacturers in the Motor Vehicle Industry and Allied Lines Are Doing or Have Under Consideration.

The Firestone Tire and Rubber Co. has opened its new branch at Los Angeles, Cal. The occasion was attended by a celebration in which the business houses and city officials participated. The exercises were attended by over 500 Firestone dealers from all parts of Southern California, Arizona and Nevada. Street decorations and special window displays in many stores proclaimed the opening as Firestone Day and the visiting dealers, officials and others present rode in automobiles, which paraded through the main thoroughfares.

The Sterling Engine Co., Buffalo, N. Y., will manufacture the 12-cylinder Sunbeam aeroplane engine, rights in this country for its production having been obtained from the English company, which owns the patents, with the consent of the British admiralty.

The Olympian Motors Co., Pontiac, Mich., has purchased the plant formerly owned by the Cartercar company in Pontiac, and will take possession of the new plant on April 1. Fifteen acres of land adjoining the new plant have also been acquired by the Olympian company, which will use the land for the erection of a modern assembly plant. This building will be 800 feet long and 100 feet wide. The equipment and manufacturing facilities will be moved into the new plant during the spring and this work will be handled so that production will not be interfered with.

The Velie Motor Vehicle Co. has announced a new price schedule, which will become effective on March 1. The new prices are $50 higher on all open models.

The Cadillac Auto Truck Co., Cadillac, Mich., manufacturer of the Acme truck, has advanced prices on its products, the new schedule becoming effective on Feb. 15. The new prices are as follows: One ton, $1575; two ton, $2200; three ton, $3000.

The Hayes Motor Truck Wheel Co., St. Johns, Mich., manufactured 66,000 wheels last year and did a gross business of $260,000. The company now has 145 men on the pay roll. At the annual election the following officers were chosen: C. B. Hayes, president; N. S. Potter, vice president and treasurer; A. D. Smith, secretary and general manager; W. C. Morrey, vice president and timber manager; H. J. Kellar, superintendent. An order for 20,000 wheels has been received from the Maxwell Motor Co.

The Dort Motor Co., Flint, Mich., has increased its capital from $500,000 to $1,500,000. Most of the increase has been issued and paid for, the present stockholders taking most of the new stock.

The Harroun Motor Corp., Detroit, Mich., has closed a contract with the Timken Roller Bearing Co., under which the latter will furnish Timken roller bearings for Harroun cars.

The New Castle Rubber Co., New Castle, Penn., has ceased production on unguaranteed tires and will soon place on the market a new tire to be known as the "Shenango." Production will be continued on the New Castle guaranteed tire.

The Wisconsin Motor Mfg. Co., Milwaukee, Wis., has moved its New York branch office to 21 Park Row, where the company is represented by T. M. Fenner.

The Anderson Motor Co., Rock Hill, S. C., is planning to double its output, which at present is running at the rate of 100 cars a day.

The Continental Motors Co., Muskegon, Mich., turned out 6536 motors during the month of January as compared with 5556 in December. On Jan. 31, 360 motors were produced, which is the highest production for any one day in the history of the company's business.

The F. I. A. T. Co., Poughkeepsie, N. Y., which was recently sold to the F. I. A. T. Co., Tourin, Italy, will engage in the manufacture of a medium priced car on a large scale as soon as the war is over.

The Beijer Hydraulic Transmission Co., Stevens Point, Wis., has installed its transmission system in several automobiles for demonstration. At the annual meeting held recently the following officers were re-elected: N. A. Week, president; R. K. McDonald, vice president; F. D. Reynolds, secretary-treas-

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The Inner Man Receives Much Consideration by the Pierce-Arrow Company; at the Left Is a View of the Model Bakery; at the Right Is the Thoroughly Modern Kitchen, Where Meals Like That Shown at Bottom Are Prepared. This Meal Would Ordinarily Cost 50 Cents.

urer; Arthur Beijer, manager.

The Jordan Motor Car Co., Cleveland, O., will manufacture 5000 cars during the current year. At present the output is at the rate of 3000 annually. E. S. Jordan, president of the company, announced at the annual meeting that over $1,000,000 worth of materials had been used by the company from the time production started last August up to Jan. 1, 1917. The old board of directors and officers were re-elected.

The Simplex Automobile Co., New Brunswick, N. J., which now builds about 500 high priced six-cylinder cars a year, is planning the production of a new four-cylinder car of which 800 will be manufactured annually. The new engine will be an L head 4x5 cast en bloc type and will develop approximately 35 horsepower. It will be installed in a town car model with a 125-inch wheelbase. The chassis will sell at $4000. Production of the Hispano-Suiza engines has begun at the plant and it is expected that this year's output will total 300. These motors, which are for aeroplanes, are being made for the Wright-Martin Aircraft Corp., which owns the Simplex plant.

The Ford Motor Co., Detroit, Mich., is reported to have contracted for material sufficient for the construction of a quarter of a million of one-ton trucks, and it is stated that they will be placed on the market early in the coming spring.

The National Motor Car Corp., Indianapolis, Ind., shipped twice as many cars in January as were shipped in the corresponding month of 1916, and the shipment was 50 per cent. above that necessary to meet the annual output.

The Motor and Accessory Manufacturers Association has appointed committees for the ensuing year as follows: Executive committee: President C. W. Steiger, chairman; C. E. Thompson, E. H. Broadwell, J. H. Foster, W. O. Rutherford, Christian Girl and A. P. Sloan, Jr. C. E. Thompson, first vice president of the association, heads the finance committee, which has the same personnel as the executive committee. Show and allotment committee: Christian Girl, C. E. Thompson, E. H. Broadwell, J. H. Foster and W. C. Rands. Banquet committee: W. M. Sweet, E. H. Broadwell, T. J. Wetzel, J. H. Foster and Christian Girl. Membership committee: E. W. Beach, E. H. Broadwell, T. J. Wetzel. Auditing committee: C. W. Steiger, A. P. Sloan, Jr., and L. M. Wainwright. Aeronautic committee: C. W. Steiger, C. E. Thompson and W. M. Sweet.

The Chalmers Motor Car Co., Detroit, Mich., signed contracts with dealers and agents at the Chicago show for practically all of its 30,000 car output for 1917. It was announced that one dealer whose territory is confined to one county signed for 2700 cars.

The Indian Rubber Co., Akron, O., which was recently organized, and which has a capital of $125,000, will spend $100,000 on a new plant and equipment to be located on a site of 13 acres which has been acquired at Magadore. The principal stockholders in the company are J. M. Alderfer, J. K. Williams and R. M. Pillmore.

The Reflex Ignition Co., Cleveland, O., is operating its plant with day and night shifts and will produce 1,000,000 ignition systems this year, including the new style No. 21 for foreign makes of cars and the Diamond Reflex, which is a large type plug, made for heavy commercial cars and racing machines.

The Belmont Motor Car Co., Toledo, O., has been organized with a capital of $125,000 to build a line of pleasure cars, including two, four, five and seven-passenger models and enclosed types.

The Columbia Motors Co., Detroit, Mich., are planning the erection of a large plant in the near future which will give ample space for any expansion that becomes necessary in the next few years.

The Chandler Motor Car Co., Cleveland, O., announces that contracts have been signed with agents and distributors calling for $27,000,000 worth of Chandler cars for 1917.

The Ford Motor Co., Detroit, Mich., has placed an order for 20,000 tons of steel with the American Bridge Co., to be used in erecting a plant at Cork, Ireland, which will be used for manufacturing Fords for the British trade. An order has also been placed with the United States Steel Corp. for 200,000 tons of various materials to be delivered during 1918.

The Pull-More Motor Truck Co., New Castle, Penn., will commence manufacturing operations in its new plant on or about March 1 and the officials expect that the production will be increased to 100 trucks per month by June. The company's product will be a three-ton truck, which will sell at $3000. The company was recently incorporated with a capital of $1,000,000. The officers are: E. M. S. Young, president and general manager; Col. H. P. Pope, vice president; Kenneth R. Cunningham, secretary and treasurer; J. M. Richards, works manager; H. H. Marker, chief engineer; R. C. Spohn, sales manager.

The Brazil Motors Co., Brazil, Ind., has been incorporated with a capital of $150,000 to engage in the manufacture of a motor truck with a front drive. The plant of the Brazil Fence Company has been purchased and will be used for manufacturing operations.

The Brisk-Blast Mfg. Co., St. Louis, Mo., makers of tire pumps, grease guns and jacks, is to locate in a new plant in Monroe, Mich. The company has a capital of $200,000.

The Dale Body Co., Fostoria, O., has been formed as a subsidiary of the Allen Motor Car Co. and will manufacture bodies for the Allen cars.

The Streator Motor Car Co., Streator, Ill., in bankruptcy, went out of existence on Feb. 10 when the creditors met in Peoria, Ill., and divided the sum of $9166, which was all the cash in hand with Receiver E. U. Henry.

A. Z. Metal Works, Thiensville, Wis., has resumed manufacture of radiators and cooling systems in a new factory.

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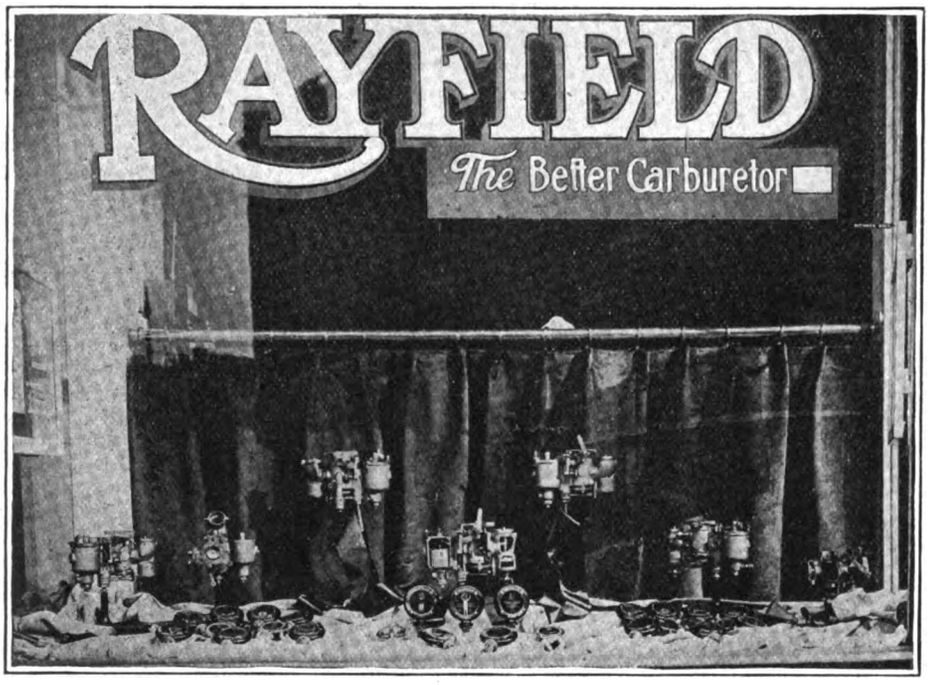
The American Motor Truck Co., Detroit, Mich., has been incorporated for $600,000. A site has been acquired and work will be begun immediately on a plant in southwestern Detroit along the tracks of the Michigan Central.

The Independent Auto Truck Co., Davenport, Ia., is to be incorporated in that state for $50,000. The company will manufacture a truck to sell for $1100. The incorporators are Charles Zoller and E. August.

The Bearings Service Co., Detroit, Mich., will open branches at Philadelphia, Rochester, Cleveland and Indianapolis. The company already has branches in 11 cities where users of Timken, Hyatt and New Departure bearings are given service direct from the factory.

The K. D. Carburetor Co., Cleveland, O., has been reorganized with a capital of $275,000 and has purchased the plant of the Atlas Bolt and Screw Company, which will be occupied as soon as the machinery and equipment can be installed.



How the Makers of Rayfield Carburetors, Findelsen & Kropf Mfg. Co., Displayed Their Instruments Recently to Persons Passing Company's Broadway Sales Room.

The Silvex Co., South Bethlehem, Penn., makers of five-point spark plugs, has commenced manufacturing operations on a one-point spark plug and a pneumatic shock absorber specially designed for Ford cars.

The Cleveland Motor Plow Co., Cleveland, O., has awarded a contract for the erection of an addition to its new plant. The new factory building will be 60x300 feet.

Bates & Edmonds Motor Co., Lansing, Mich., are building an addition to the present plant, which will afford double the present production facilities.

Sioux City Tire and Mfg. Co., Sioux City, Ia., is planning the construction of a two-story plant, 80x130 feet, with a boiler room 30x52 feet.

The Beaver State Motor Car Co., Gresham, Ore., will commence operations in its new malleable iron foundry in the near future.

The Blue Ribbon Body Co., Bridgeport, Conn., has been organized with a capital of $500,000 to engage in the manufacture of automobile bodies. The incorporators of the company are: E. A. Godfrey, J. J. Godfrey and G. H. Woods.

The Auto Specialty Co., St. Joseph, Mich., which recently moved to that city from Joliet, Ill., has begun active operations.

The Gile Tractor Co., Ludington, Mich., has over 180 men on the pay roll, which is double the number that has been employed in the past.

The Ford Motor Co., Detroit, Mich., has prepared plans for a new steel frame building to cost $265,432.

The Pullman Motor Car Corp., York, Penn., has been organized with a capital of $250,000 by interests identical with those that own the Pullman Motor Car Co., which is in the hands of receivers temporarily. The new company will market the output of the Pullman Motor Car Co., which will announce a new six-cylinder model in a few weeks, to be sold at a low price and manufactured in large quantities.

The Equipment Co., Kansas City, Mo., has been organized with a capital of $1,000,000 to deal in accessories, parts and supplies for automobiles. The company will operate a chain of accessory stores across the country and is said to be backed by a wealthy steel magnate.

The Federal Motor Truck Co., Detroit, Mich., has called a meeting of stockholders for Feb. 13, at which they will be asked to approve an increase in the capital stock of the company from $500,000 to $2,000,000 and to authorize a stock dividend of 100 per cent. The rest of the issue will be in the form of 100,000 shares of a par value of $10 each and will be retained as treasury stock for future requirements. In 1916 the company paid 40 per cent. in cash dividends.

The Grant Motor Car Corp., Cleveland, O., has commenced production in its new plant at the latter city, which has 155,000 square feet of floor space. It is equipped with all the latest machinery and facilities and has a conveyor system in connection with the assembly department that makes it possible to turn out a car every 10 minutes. The company is now in a position to meet almost any demands made upon it by the dealers for cars during the coming year. In the past two years the company's business increased over 1000 per cent., and as it was impossible to make the necessary enlargements at the Finlay, O., plant to cope with the demand the present large factory was erected at Cleveland.

The Paige-Detroit Motor Car Co., Detroit, Mich., manufactured 12,456 cars in 1916 as compared with 7749 in 1915 and 4631 in 1914. The gross sales during the year 1915 totaled $7,471,033, while the total sales for the 10 months ending Oct. 31, 1916, were $9,899,790. The net income available for dividends last year was $964,442, as compared with $609,775 in 1915. During 1916 the company's capital was increased first from $500,000 to $1,000,000, and later to $1,500,000.

The Paige Motor Car Co., Detroit, Mich., has purchased 51 acres, which will be used for the site of a new plant. The plant buildings now being used, which are leased, have been sold to the Pennsylvania railroad.

The Auto Body Co., Appleton, Wis., is manufacturing bodies for pleasure cars and trucks. The company was organized by D. H. Pierce and Gustave Seeger.

Fuller & Sons Mfg. Co., Kalamazoo, Mich., manufacturers of automobile parts, are planning the erection of a new factory to cost $150,000. The building will be four stories in height and 60x176 feet.

The Universal Four-Cycle Motor Co., Muskegon Heights, Mich., have purchased a site for a new factory in that town.

Gary Motor Truck Co., Gary, Ind., have asked for bids on a new assembly plant to cost $9000. The building will be 110x120 feet.

East Palestine Rubber Co., East Palestine, O., has prepared plans for the first two buildings that will make up its new plant. One of the structures will be 200x400 feet and the other 90x100 feet.

The Torbensen Axle Co., Cleveland, O., has awarded a contract for the erection of an addition to its present plant, which will provide about 30,000 additional square feet.

The Smith Motor Truck Corp., Chicago, Ill., shipped 555 truck forming attachments during the first 16 days of January. The company has placed contracts with agents for 15,000 attachments for the coming year.

The Wolverine Car and Tractor Co., Wayne, Mich., of which W. G. Wagenhals is the president, is seeking a site for a permanent factory location.

The Motor Castings Co., Detroit, Mich., has been placed in the hands of a receiver with liabilities of $100,000 and assets of $225,000.

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LIQUID GASKETS.

A preparation that fills a long felt want in motordom is now sold under the name of Tenox Liquid Gasket. This liquid is used for making a non-leaking and perfect joint between cylinder heads and cylinder blocks, between cylinders and crank case. It is ideal for use on pipe threads and all oil and fuel connections. A perfect joint is obtained by cleansing the faces of the flanges and coating the surfaces to be joined with Tenox, then assembling. A non-leaking joint is the result. Tenox Liquid Gasket is applied with a brush, like paint; and the result is lasting. It is for use in the private as well as public garage and has been indorsed highly.

Manufactured by Tenox Products Co., Audubon Park, 158th St., New York City. Prices range from 20 cents for one-half pint to $1 for a quart. Send 30 cents for trial can.

Oil Filler.

Liquid Gasket.

OIL FILLER AND BREATHER.

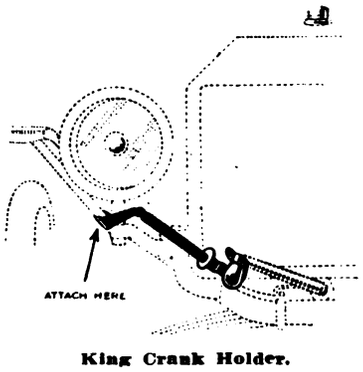
The Premo Oil Filler and Breather is claimed to be the lightest and neatest filler on the market. The illustration shows a means of fastening that the maker claims makes it impossible for the device to work loose or rattle. The hook engages the timer spring bolt, which passes through the breather opening. The wing nut is to provide a secure fastening and the oil strainer is held firmly between two rings. The Ford filler cap fits into the cover of the Premo. The whole device has a baked black enamel hard rubber finish.

Made by the New York Motor Car Device Co., 200 Eleventh Ave., New York, N. Y. Price, 75 cents.

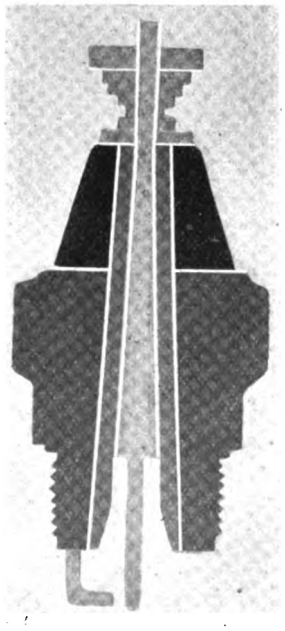
SPARK PLUG TESTER.

In order that an engine may run well and give its maximum power the spark plugs must be in the best of condition. The Perkins spark plug tester is made for the purpose of locating faulty spark plugs, and for setting the spark gaps in all plugs so that they will be in "tune." The tester is made in two colors, black and red, neatly finished and of high grade insulate composition.

Manufactured by A. D. Perkins, 1777 Broadway, New York, N. Y. Price, 75 cents.



King Crank Holder.



Answer Spark Plug.

ANSWER SPARK PLUG.

"The Answer to Spark Plug Troubles" is the advertising slogan used with the Answer spark plug, a cross section cut of which appears herewith. The Answer plug is made up as follows: A special steel spindle larger at the bottom than at the top is covered by a layer of mica insulation which, owing to the construction, is at all times under a pressure. The spindle with the mica insulation, which is 3/32 inch thick, fits into the base of the plug, the top of which is made up of mica insulation compressed and polished. The electrodes are guaranteed not to burn or fuse.

Manufactured by the Hilborn Co., Inc., 535 Canal St., New York, N. Y. Regular sizes, $1. Ford special, 75 cents.

KING CRANK HOLDER.

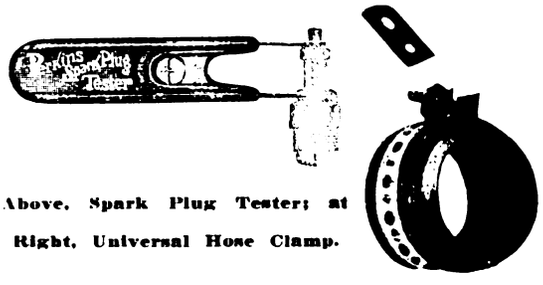
The King crank holder is a neat device for holding the starting crank tight so as to prevent rattling. It extends from the mudguard iron to crank handle and keeps the crank from conflicting with crank shaft, thus saving wear.

Manufactured by the King Specialty Mfg. Co., Brookline, Mass. Price, 35 cents.

UNIVERSAL HOSE CLAMP.

The Universal Hose Clamp is designed for the man who does not want to carry on hand an assortment of various sizes of clamps. It is said that this clamp combines all the good and desirable features of other types and besides is adaptable to all sizes and shapes of hose. There is only one piece to handle, it being slipped around a pipe no matter in what position it may be. It tightens with very little effort and grips the hose evenly all around.

Manufactured by The Universal Clamp Mfg. Co., 150 Broadway, Concord, N. H. Prices upon application.



Above, Spark Plug Tester; at Right, Universal Hose Clamp.

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FOOT ACCELERATOR.

The Bull Dog Foot Accelerator for Ford cars is a device whereby the gas is controlled by a foot pedal, leaving both hands free for steering. When the foot is lifted to apply the clutch, the gas is automatically shut off. The makers say that no mechanical knowledge is necessary for attaching it, which can be accomplished in 15 minutes time.

Manufactured by the W. H. Thomas Co., Spencer, Ia. Prices furnished.

SHOCK ABSORBERS.

The cantilever principle is taken advantage of in the construction of the Aitchandee shock absorbers. Its important feature, that the tension is different on the upward and downward thrust, is claimed to make the Aitchandee shock absorber efficient. The makers say that these shock absorbers save tires by preventing side sway and pounding. Vibration, which loosens up bolts and screws, is eliminated, as is rattling.

Made by the H. & D. Company, Inc., Goodland, Ind. Price per set of four, $10.

SUIT CASE HOLDER.

The Common Sense Suit Case Holder is made in two lengths and holds the suit cases upright on end in the holder, the lid of which is lined with a rubber strip, making it dust and weather proof.

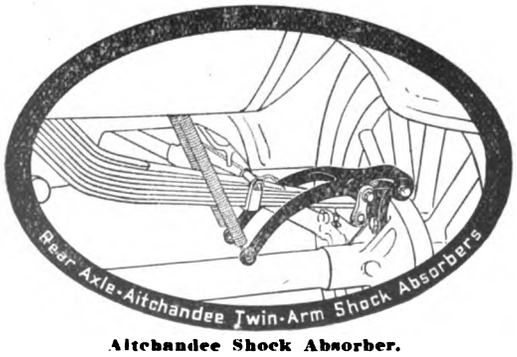
The holder does not project from the car any more than the fenders and the lid is equipped with leather straps to hold coats, dusters, etc. These holders, when bolted to the running board, make a most complete and convenient baggage carrying device for touring.

Made by the Globe Machine and Stamping Co., Cleveland, O. Price for three suit case capacity, $25; for four suit case capacity, $30.

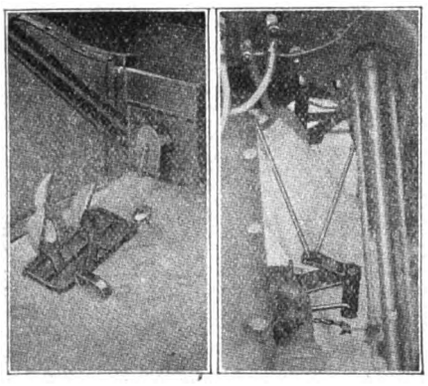
UNION PISTON RINGS.

Union piston rings are sold under a positive guarantee and are warranted to be efficient. They are made from individual castings of the finest quality of gray iron, and are ground to exact measurements after the union is inserted, so that a perfect fit will be obtained in the cylinder.

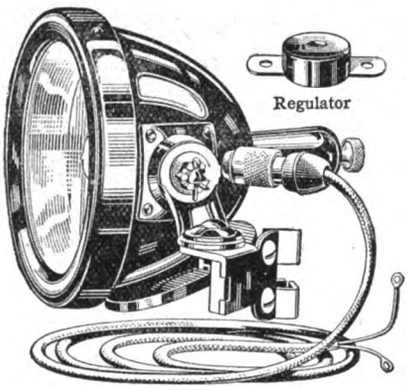
Made by the Union Products Co., Rockford, Ill. Prices ranging from $1 to $2, according to size. Write for further information and price list.



Aitchandee Shock Absorber.

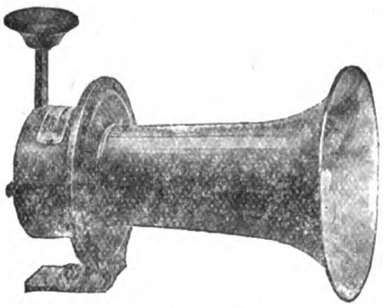


Bull Dog Foot Accelerator.

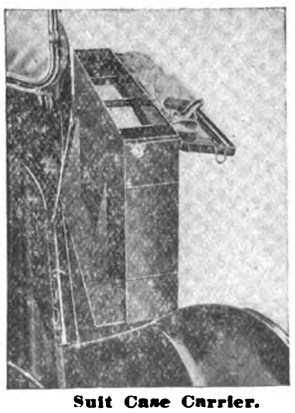


Dynolite for Ford Cars.

New Era Sparking Contact Points.



Casco Long Horn.



Suit Case Carrier.

DYNOLITE FOR FORD CARS.

Dynolite, a high grade spotlight, designed especially for Ford cars, and of the true parabolic type, is the new member of Vernal Products family, which includes Genolite and Constolite, a starting and lighting system for Fords, that has been sold in large volume. Dynolite throws a brilliant light more than 2000 feet ahead of the car and it can be focussed instantly to comply with any anti-glare regulations. The maker claims it is the first and only practical windshield spotlight that has ever been built exclusively for use on Ford cars, and that it possesses several patented features that cannot be found in other lamps. It can be focused without the use of tools; the current can be turned off or on instantly by means of a foolproof switch in the handle; it has a waterproof swivel joint; has a bracket that fits all Ford cars; has interchangeable parts and has bayonet locks to secure door and reflector and lens. Dynolite operates off the magneto and uses a six-volt, 24 candlepower bulb. It gives almost full power at low speeds, and maximum light at speeds above nine miles per horsepower. Integral with the body is a mirrorscope, providing a view of traffic behind or beside the driver. The foregoing gives some of the features of the lamp and the maker's free literature amplifies the information.

Manufactured by the Detroit Starter Company, Detroit, Mich. Write for price and complete catalogue.

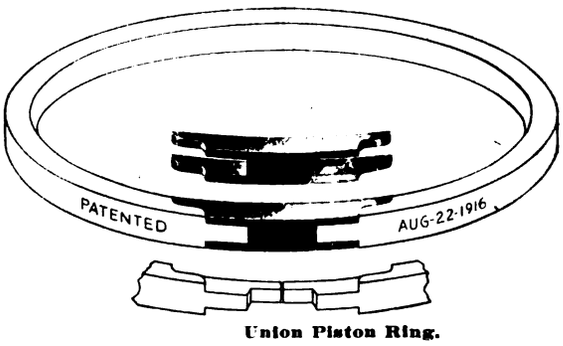
CONTACT POINTS.

Contact points for replacing worn vibrator points, or points in magnetos, made from an alloy of materials which the makers claim are harder than platinum, are being placed upon the market under the name of New Era Indestructible Sparking Contact Points. The makers claim these points to be indestructible and offer a broad guarantee.

Manufactured by the New Era Spring and Specialty Co., Inc., 864-78 Woodward Ave., Detroit, Mich. Prices from 60 cents to $1, according to sizes.

COMBINATION CARRIER.

Greene's Combination Tire and Luggage Carrier for Ford cars, as the cut shows, forms a convenient holder for a tire luggage without detracting from the appearance of the car. It is made of structural steel, solidly welded on cor-



Union Piston Ring.

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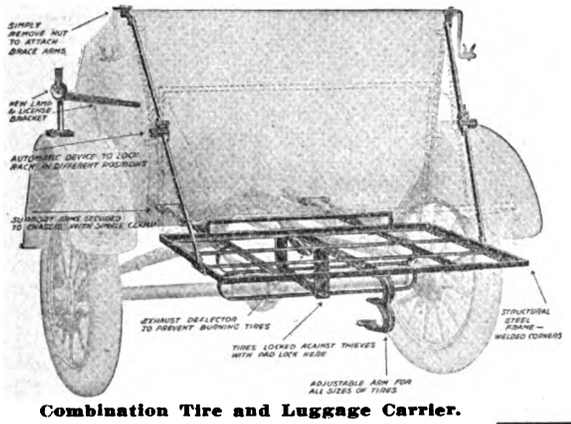


Combination Tire and Luggage Carrier.

ners with bar steel cross pieces. When used as a tire carrier it requires no straps to hold the tires in place and may be folded up against the back of the car. An exhaust deflector is provided to avoid danger of burning tires. Lamp and license bracket is removed from accustomed position and a new bracket is furnished to clamp on top of left fender. Weight, 35 pounds.

Made by the Hastings Mfg. Co., Hastings, Mich. Price, $8.50 complete.

PUNCTURE PROOF INNER TUBES.

The Sternwear puncture proof inner tubes were displayed for the first time at the New York Automobile Show and attracted much attention. The maker advises that they are designed to give upwards of 20,000 miles of service without puncture or blowout because of their patented construction, and that they have been subjected to almost every test conceivable before they were placed on the market. A million dollar concern was recently organized to manufacture these tubes.

Made by the Sterns Tire and Tube Co., St. Louis, Mo. Complete details and prices to be had from the manufacturer, who has an interesting agency proposition for dealers.

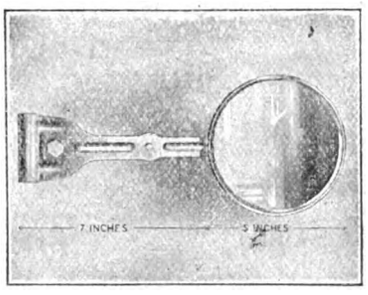
EXHAUST DEFLECTOR.

This is a small device made of heavy steel, finished in glossy black japan, baked on and ready to be attached to the exhaust pipe of the Ford car. Its purpose is to direct the grease, smoke and dirt from the exhaust on the road instead of on the car.

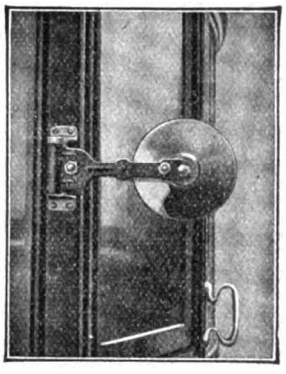
Made by the Corcoran Mfg. Co., Cincinnati, O. Price, 25 cents each.

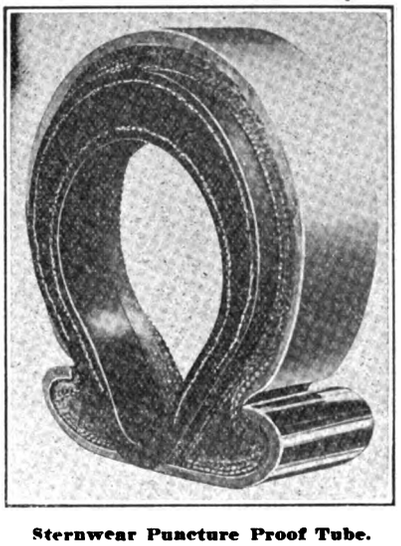
LONG HORN.

The Long Horn, shown in the cut, is both ornamental and durable. The contact between the diaphragm and the rotor is made by steel rollers inserted in the rotor, which is of hardened steel. Their action on the diaphragm gives a rolling tone peculiar to the Long horn. The volume of sound may be varied from a long, low rumble to a loud, sonorous crash, and continues after power impulses have ceased. It is finished in

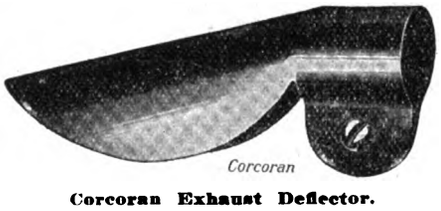


Hind View Mirror, Open Car Type at Left, Closed at Right.



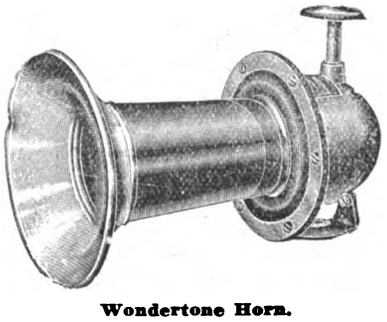


Sternwear Puncture Proof Tube.



Corcoran Exhaust Deflector.

Glare-Off Headlights.



Wondertone Horn.

three styles: All black, black and nickel and black and brass. Total length, nine inches. Length of bell, 6¼ inches.

Made by Edward A. Cassidy Co., Inc., 30 East 42nd St., New York City. Price, $5.00.

HIND VIEW AUTO MIRROR.

A neat and substantially built automobile mirror is being marketed under the name of "Hindview." It may be had in a variety of styles and finishes, the mirror being made of plate glass, either plain or lens. The lens mirror increases the field of vision about 50 per cent. without distorting the view. Illustration shows style A for open cars, and style C for closed cars. The maker states that when the device is in position, either on an open car or a closed one, it will afford positive vision of whatever is coming from behind.

Manufactured by the Kales-Haskel Co., Detroit, Mich. Write for prices.

GLARE-OFF HEADLIGHTS.

Glare-Off headlights are placed inside the ordinary automobile lamp and are designed to throw the light downward and forward onto the road. They are made of metal and are ornamental as well as useful. The designs are worked out in a rich red, gold and black, and have the appearance of old Japanese lacquer and are to be had in a number of patterns.

Made by the Glare-Off Co., 1777 Broadway, N. Y. Prices upon application. Special monogram or initials furnished.

WONDERTONE HORN.

The Wondertone Horn is a mechanically operated warning signal that employs no gears and is guaranteed to give service. The chief claim advanced by the maker is its simplicity of construction, which provides freedom from trouble. The plunger automatically springs back without friction and does not stick. The mechanism is said to be absolutely water proof and requires only a drop of oil to lubricate. Because of its constructional features it cannot rattle in the severest of service, the maker declares.

Made by the Motor Appurtenances Corp., Broadway and Eighth Ave., New York, N. Y. Retail price, $3.

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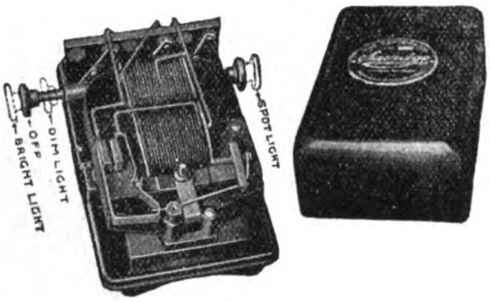
LIGHT TRANSFORMER.

The Savidge Light Transformer for Ford cars is claimed by the manufacturers to utilize the current furnished by the Ford magneto and furnish a brilliant, uniform light at all speeds. Its action is as follows: At low speed of the engine the "Savidge" transforms the current so as to produce a brilliant white light in the left headlight, at the same time providing a diminished light in the right headlight. This driving light in the left headlight remains practically constant at all speeds from low to high.

At approximately 14 miles per hour the light in the right headlight is automatically brought up to full brilliancy. On speeds above 14 miles per hour both headlights remain practically constant at full and normal brilliancy.

The Savidge Light Transformer is provided with two switches, as shown in cut. The first gives an "Off" position for the headlights, a "Dim" and a "Bright," while the second is used to control a spotlight.

Made by The Savidge Co., Indianapolis, Ind. Price, $6.50.



Savidge Light Transformer.

Transformer on Steering Column.

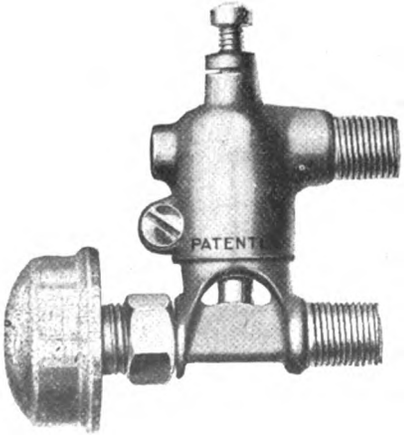
THERMOSTATIC VAPORIZER.

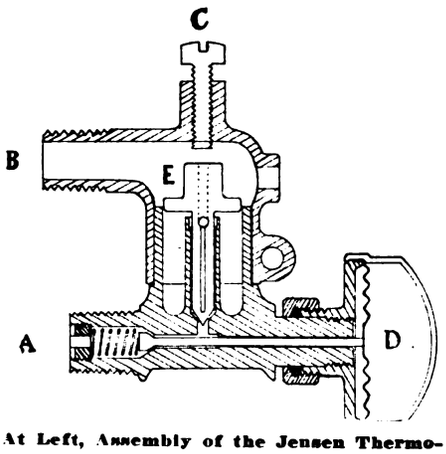
The Jensen thermostatic vaporizer is a device which constantly introduces a proper proportion of warm, damp air into the mixing chamber of the carburetor. It is intended to insure an ideal gas mixture, at the same time preventing carbonization, pre-ignition, overheating and consequent pitting and warping of the valves and burning of cylinder oil.

Referring to our illustration: The connection "A" is screwed into the water jacket of the engine and turned so as to bring the screw "C" at the top (valve "E" must be in an upright position). The top outlet "B" is connected with the mixing chamber of the carburetor below the throttle.

As the throttle is opened the suction through "B" is increased and valve E is raised in proportion to throttle opening, allowing a certain amount of water to pass through the valve to the carburetor. The amount of water passing through the vaporizer is regulated by the screw C and by the thermostat at "D."

Marketed by Halliwell Bros., 329 West Pico St., Los Angeles, Cal. Price, $5, ready to install.



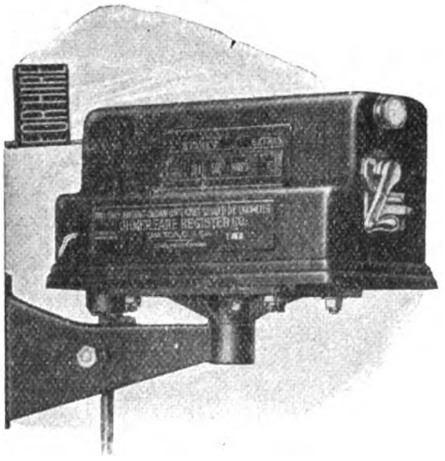


At Left, Assembly of the Jensen Thermostatic Vaporizer; Above, Cross Section of Same.

THE OHMER TAXIMETER.

This device is designed for taxicabs, printing an itemized ticket showing the total fare in dollars and cents. The receipt also bears the date, serial ticket number, amount charged for extras, the meter number, the name of the taxicab company, instructions as to making complaints and, in fact, all the information a passenger is likely to desire. The meter also keeps a secret record of each transaction, embodying a duplicate of the passenger's slip, which is available only to the one holding the meter key. The device is set in operation by setting a flag in the "hired" position. Running at a rate of less than six miles an hour the charges are computed on a time basis, but if a higher rate is maintained the meter automatically computes on the basis of the established mileage rate. In case of accident or unavoidable delay the flag is set in a certain position and the machine apparently does not register. As a matter of fact it does record the time lost, which is printed on the secret record. The flag can be returned to the "hired" position by the driver at will, but it can be placed in the "for hire" position only after a ticket has been printed, which is done by turning a crank, making it mechanically impossible for the driver to avoid making a complete printed record of the trip. The taxicab driver is provided with a special key, which he must use before the machine will begin to operate; this key prints the driver's number on each ticket, which is a valuable feature.

Made by the Ohmer Fare Register Company, Dayton, O. Prices and further particulars upon request.

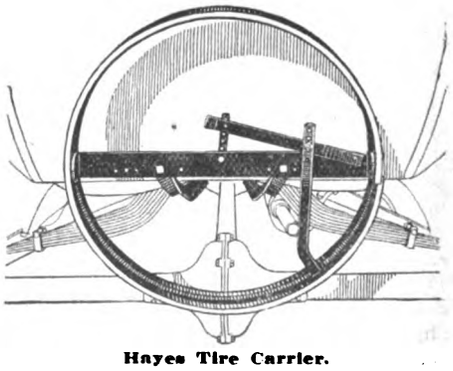


Ohmer Taximeter.

HAYES TIRE CARRIER.

The Hayes tire carrier consists of a 20 gauge steel rim with a half-inch flange on each side. This rim has no open spaces. A ridge in the rim forces the shoe to the sides of the flanges, thus forming a water tight, dust proof connection. A lever adjusts the carrier to fit the tire. When in place the tire is locked on carrier with an ordinary padlock. Illustration shows the method of attaching to car. It is made in two types for Ford and Chevrolet cars and may be had for either one or two tires.

Manufactured by Onguard Auto Necessities Co., 982 Woodward Ave., Detroit, Mich. Single type, $4; double type, $6.



Hayes Tire Carrier.

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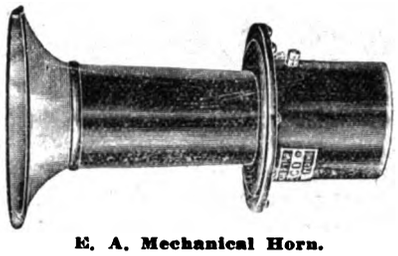
E. A. HORNS.

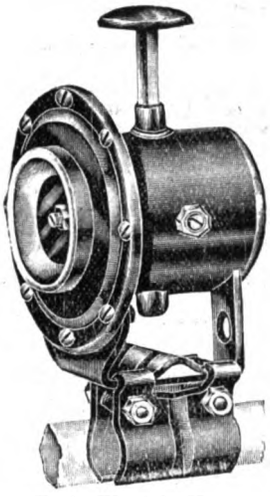
The E. A. Laboratories are putting out an interesting line of hand operated and electrical motor driven horns. One of each is shown in our illustration.

The manufacturers claim that expert designing and manufacturing directions, coupled with years of uninterrupted experience, enables them to put out a horn of service at a low price. They produce horns in large quantities and of practically any size and description, whether motor driven or hand operated.

Manufactured by E. A. Laboratories, Inc., Broadway and Wythe avenue, Brooklyn, N. Y. Prices on application.



E. A. Mechanical Horn.



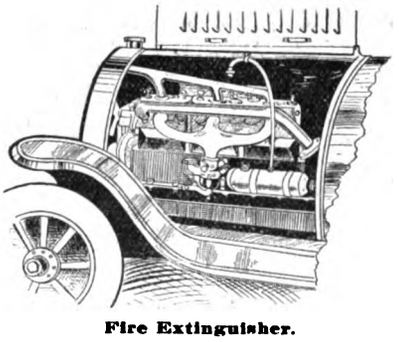
E. A. Electric Horn.

FIRE EXTINGUISHER.

An automatic fire extinguisher is shown in an accompanying illustration. It consists of a smaller copper tank containing a power plant and extinguishing fluid, a fusible release plug, nozzle attachment and brass fittings so arranged that contents are under perfect automatic control.

At first sign of fire it goes automatically into action, driving a liquid with great force through a spray nozzle so directed that it floods engine and equipment with a chemical said to be harmless to metal or fabric, but dealing an instantaneous death blow to fire, smothering it beneath the closed hood and eliminating all personal danger and preserving the appearance of the car. The recharging of the power plant once a year or refilling after use is all the attention required.

Manufactured by Luzerne Lumber Co., Luzerne, Penn. Prices upon request.



Fire Extinguisher.

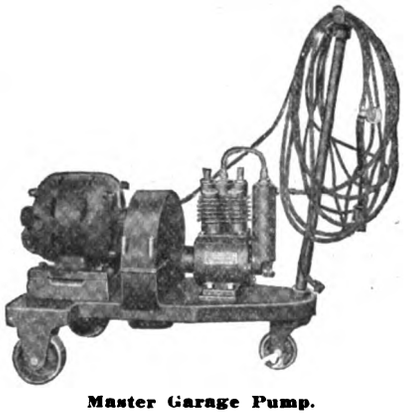
MASTER GARAGE PUMPS.

Two new models have been added to the line of Master Garage pumps this year. One of these, known as Model W, is a two-cylinder pump, which is furnished either on a truck or to be mounted stationary and is designed for use where large quantities of air are called for. It is driven by a one-half horsepower General Electric motor and may be used either for pumping air directly into tires or for maintaining pressure in a reservoir tank.

The other new pump, known as Model Y, is stationary and belt driven, and is designed for garages equipped with a power plant and shafting. This has the same characteristics as the Model W and can be utilized for supplying air in the different ways mentioned.

No piston rings are used in any of the models of Master Garage pumps, the pistons being extra long and of carefully hardened steel, tempered and ground to exact size and lapped into the cylinder walls. This eliminates the use of rings or packing material and the chance of oil getting mixed with the air.

Made by the Hartford Machine Screw Co., Hartford, Conn. Prices supplied on application.



Master Garage Pump.

Quality Breather.

HOYTS QUALITY BREATHER.

Hoyts' quality breather and oil filler pipe is intended for Ford cars. It prevents oil from spraying over motor, fan belt, wires and inside of the hood, and makes replenishing of oil an easy matter without spilling. Inside of the breather there is a very fine mesh strainer, which strains all oil poured into the motor. Installation is said to be very easy and when once fastened by passing timer bolt through hook, as shown in cut, it becomes stationary and cannot rattle loose.

Manufactured by Hoyts Auto Supply Co., 370 Fairfield Ave., Bridgeport, Conn. Price, 75 cents.

PREST-O-GRIPS FOR TRUCKS.

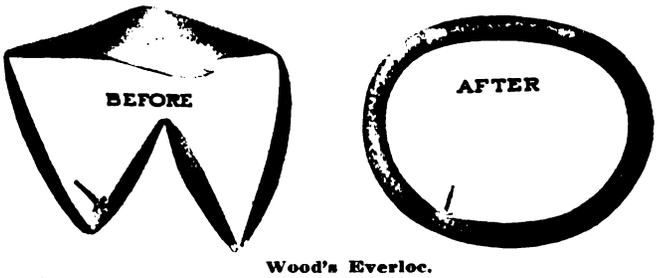
Prest-O-Grip is the trade name for a new type of truck tire chain recently brought out. The outstanding features of Prest-O-Grips are that each chain is a unit, which allows great flexibility in their use, and that because of their manner of attaching can be put on or taken off with the minimum of labor and time. The maker recommends seven chains to each wheel, although a smaller number may be used if desired. Each Prest-O-Grip consists of a cross chain of special and tough steel and two lock links that secure the chain to a clamp that remains on the spoke at all times. The cross chain has a twist that causes it to lay flat on the tire, and the spoke clamp is rubber lined to prevent chafing. Prest-O-Grips can be had for any size or make of truck, and replacements are easily and cheaply made. When not in use they can be carried under the seat or in the tool box.

Made by Rowe Calk Co., Plantsville, Conn. Price of each unit ranges from $1.75 to $2.85, according to length of chain needed.

WOOD'S EVERLOC.

Our two illustrations show the class of work that the Wood's Everloc patch will do. The makers guarantee a permanent job on any puncture from a nail hole to a cut or blow out 17 inches in length and say that it can be applied in five minutes. No heat or tools are required to make such a repair. Sheets are made in various sizes and come rolled in container, with tube of cement, etc., complete.

Made by W. C. Wood Co., 40 North 10th St., Minneapolis, Minn. Prices from 50 cents to $1.50, according to size.



Wood's Everloc.

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Cars for 1917 and Addresses of the Makers

ABBOTT-DETROIT, Abbott Corp., Cleveland, O.
AIRMOBILE, Rotary Products Co., Los Angeles, Cal.
ALAND, Aland Motor Car Co., Detroit, Mich.
ALLEN, Allen Motor Co., Fostoria, O.
ALTER, Alter Motor Car Co., Grand Haven, Mich.
AMERICAN, American Motors Corp., Plainfield, N. J.
AMS-STERLING, Sterling Auto Mfg. Co., Amston, Conn.
ANDERSON, Anderson Motor Co., Rock Hill, S. C.
APPERSON, Apperson Bros. Auto Co., Kokomo, Ind.
ARBENZ, Arbenz Motor Car Co., Chillicothe, O.
AUBURN, Auburn Automobile Co., Auburn, Ind.
AUSTIN, Austin Automobile Co., Grand Rapids, Mich.

BAILEY ELECTRIC, S. R. Bailey & Co., Amesbury, Mass.
BAKER R & L, Baker R & L Co., Cleveland, O.
BEARDSLEY ELECTRIC, Beardsley Electric Co., Los Angeles, Cal.
BELL, Bell Motor Car Co., York, Penn.
BEN-HUR, Ben-Hur Motor Co., Willoughby, O.
BIDDLE, Biddle Motor Car Co., Philadelphia, Penn.
BOUR-DAVIS, Bour-Davis Motor Car Co., Detroit, Mich.
BREWSTER, Brewster & Co., Long Island City, N. Y.
BRISCOE, Briscoe Motor Corp., Jackson, Mich.
BROWNIE, Carter Mfg. Co., Detroit, Mich.
BRUNSWICK, Brunswick Motor Car Co., Newark, N. J.
BUICK, Buick Motor Co., Flint, Mich.

CADILLAC, Cadillac Motor Car Co., Detroit, Mich.
CAMERON, Cameron Car Co., Norwalk, Conn.
CASE, J. I. Case T. M. Co., Racine, Wis.
CHALMERS, Chalmers Motor Co., Detroit, Mich.
CHANDLER, Chandler Motor Car Co., Cleveland, O.
CHARTER OAK, Eastern Motors Syndicate, Hartford, Conn.
CHEVROLET, Chevrolet Motor Co., Flint, Mich.
CHICAGO, Pan-American Motors Corp., Chicago, Ill.
CLASSIC, Classic Motor Co., Chicago, Ill.
COLE, Cole Motor Car Co., Indianapolis, Ind.
COLONIAL, Colonial Automobile Co., Indianapolis, Ind.
COLUMBIA, Columbia Electric Vehicle Co., Detroit, Mich.
COLUMBIA, Columbia Motors Co., Detroit, Mich.
CRAWFORD, Crawford Automobile Co., Hagerstown, Md.
CROW-ELKHART, Crow Motor Car Co., Elkhart, Ind.
CROWTHER-DURYEA, Crowther Motors Corp., Rochester, N. Y.
CUNNINGHAM, J. Cunningham Son & Co., Rochester, N. Y.

DANIELS, Daniels Motor Car Co., Reading, Penn.
DAVIS, G. W. Davis Motor Car Co., Richmond, Ind.
DETROIT ELECTRIC, Anderson Electric Car Co., Detroit, Mich.
DETROITER, Detroiter Motor Car Co., Detroit, Mich.
DISBROW, Disbrow Motor Co., Detroit, Mich.
DISPATCH, Dispatch Motor Car Co., Minneapolis, Minn.
DIXIE FLYER, Dixie Motor Car Co., Louisville, Ky.
DOBLE, General Engineering Co., Detroit, Mich.
DODGE BROS., Dodge Bros., Detroit, Mich.
DORRIS, Dorris Motor Car Co., St. Louis, Mo.
DORT, Dort Motor Car Co., Flint, Mich.
DREXEL, Drexel Motor Car Corp., Chicago, Ill.
DRUMMOND, Drummond Motor Co., Omaha, Neb.
DUNN, Dunn Motor Works, Ogdensburg, N. Y.

EAGLE-MACOMBER, Eagle-Macomber Motor Car Co., Sandusky, O.
ELCAR, Elkhart Car and Motor Car Co., Elkhart, Ind.
ELGIN, Elgin Motor Car Corp., Chicago, Ill.
EMERSON, Emerson Motors Co., New York, N. Y.
EMPIRE, Empire Auto Co., Indianapolis, Ind.
ENGER, Enger Motor Car Co., Cincinnati, O.
ERIE, Erie Motor Car Co., Painesville, O.

FAGEOL, Fageol Motors Co., Oakland, Cal.
FIAT, F. I. A. T. Co., Poughkeepsie, N. Y.
FORD, Ford Motor Co., Detroit, Mich.
FRANKLIN, H. H. Franklin Mfg. Co., Syracuse, N. Y.
FRITCHLE, Fritchle Electric Co., Denver, Col.
FRONTMOBILE, Bateman Mfg. Co., Grenloch, N. J.
F. R. P., F. R. Porter Co., Port Jefferson, N. Y.

GENEVA, Schoeneck Co., Chicago, Ill.
GHENT, Ghent Motor Co., Chicago, Ill.
GLIDE, Bartholomew Co., Peoria, Ill.
GRANT, Grant Motor Car Corp., Cleveland, O.
GREAT EAGLE, U. S. Carriage Co., Columbus, O.

HACKETT, Hackett Motor Car Co., Detroit, Mich.
HAL, H. A. Lozier Co., Cleveland, O.
HALLADAY, Barley Motor Car Co., Streator, Ill.
HARROUN, Harroun Motors Corp., Detroit, Mich.
HARVARD, Harvard-Pioneer Motor Car Co., Troy, N. Y.
HASSLER, Hassler Motor Co., Indianapolis, Ind.
HATFIELD, Cortland Cart & Carriage Co., Sidney, N. Y.
HAYNES, Haynes Automobile Co., Kokomo, Ind.
HESELTINE, Heseltine Corp., New York, N. Y.
HOLLIER, Lewis Spring & Axle Co., Chelsea, Mich.
HOMER-LAUGHLIN, Homer Laughlin Eng. Co., Los Angeles, Cal.
HOWARD, A. Howard Co., Galion, O.
HUDSON, Hudson Motor Car Co., Detroit, Mich.
HUPMOBILE, Hupp Motor Car Co., Detroit, Mich.
HUPP-YEATS, Hupp-Yeats Electric Car Co., Detroit, Mich.

INTER-STATE, Inter-State Motor Co., Muncie, Ind.

JACKSON, Jackson Automobile Co., Jackson, Mich.
JEFFERY, Nash Motors Co., Kenosha, Wis.
JONES, Jones Motor Car Co., Wichita, Kan.
JORDAN, Jordan Motor Car Co., Cleveland, O.

KENT, Kent Motors Corp., New York, N. Y.
KING, King Motor Car Co., Detroit, Mich.
KISSELKAR, Kissel Motor Car Co., Hartford, Wis.
KLINEKAR, Kline Car Corp., Richmond, Va.

LAMBERT, Buckeye Mfg. Co., Anderson, Ind.
LAUREL, Laurel Motor Car Co., Richmond, Ind.
LAYMAN-LOWY, Layman-Lowy Motor Co., New York, N. Y.
LENOX, Lenox Motor Car Co., Boston, Mass.
LEXINGTON, Lexington-Howard Co., Connersville, Ind.
LIBERTY, Liberty Motor Car Co., Detroit, Mich.
LOCOMOBILE, Locomobile Co. of America, Bridgeport, Conn.
LOZIER, Lozier Motor Co., Detroit, Mich.
LUVERNE, Luverne Automobile Co., Luverne, Minn.

McFARLAN, McFarlan Motor Co., Connersville, Ind.
MACON, Macon Automobile Co., Macon, Ga.
MADISON, Madison Motors Co., Anderson, Ind.
MAIBOHM, Maibohm Motors Co., Racine, Wis.
MAJESTIC, Majestic Motor Co., New York, N. Y.
MARION HANDLEY, Mutual Motors Co., Jackson, Mich.
MARMON, Nordyke & Marmon Co., Indianapolis, Ind.
MAXWELL, Maxwell Motor Co., Detroit, Mich.
MERCER, Mercer Automobile Co., Trenton, N. J.
METZ, Metz Co., Waltham, Mass.
M. H. C., Michigan Hearse & Motor Co., Grand Rapids, Mich.
MILBURN, Milburn Wagon Co., Toledo, O.
MITCHELL, Mitchell Motors Co., Racine, Wis.
MOLINE-KNIGHT, Moline Automobile Co., East Moline, Ill.
MONITOR, Monitor Motor Car Co., Columbus, O.
MONROE, Monroe Motor Co., Pontiac, Mich.
MOON, Moon Motor Car Co., St. Louis, Mo.
MOORE, Moore Motor Co., Minneapolis, Minn.
MURRAY, Murray Motor Car Co., Pittsburg, Penn.

NAPOLEON, Napoleon Auto Mfg. Co., Napoleon, O.
NATIONAL, National Motor Car and Vehicle Corp., Indianapolis, Ind.
NELSON, E. A. Nelson, Detroit, Mich.

OAKLAND, Oakland Motor Car Co., Pontiac, Mich.
O'CONNOR, O'Connor Corp., Chicago, Ill.
OGREN, Ogren Motor Works, Chicago, Ill.
OHIO ELECTRIC, Ohio Electric Car Co., Toledo, O.
OLDSMOBILE, Olds Motor Works, Lansing, Mich.
OLYMPIAN, Olympian Motors Co., Pontiac, Mich.
OVERLAND, Willys-Overland Co., Toledo, O.
OWEN-MAGNETIC, Baker R. & L. Co., Cleveland, O.

PACKARD, Packard Motor Car Co., Detroit, Mich.
PACKET, Packet Motor Car Mfg. Co., Minneapolis, Minn.
PAIGE, Paige-Detroit Motor Car Co., Detroit, Mich.
PARTIN-PALMER, Commonwealth Motors Co., Chicago, Ill.
PATERSON, W. A. Paterson Co., Flint, Mich.
PATHFINDER, Pathfinder Co., Indianapolis, Ind.
PEERLESS, Peerless Motor Car Co., Cleveland, O.
PENNSY, Pennsy Motors Co. of Pittsburg, Pittsburg, Penn.
PHIANNA, Phianna Motors Co., Newark, N. J.
PIERCE-ARROW, Pierce-Arrow Motor Car Corp., Buffalo, N. Y.
PILGRIM, Pilgrim Motor Car Co., Detroit, Mich.

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PILLIOD, Pilliod Motor Co., Toledo, O.
PILOT, Pilot Motor Car Co., Richmond, Ind.
PREMIER, Premier Motor Corp., Indianapolis, Ind.
PRINCESS, Princess Motor Car Corp., Detroit, Mich.
PULLMAN, Pullman Motor Car Co., York, Penn.
PURITAN, Puritan Motors Co., Boston, Mass.

REGAL, Regal Motor Car Co., Detroit, Mich.
REO, Reo Motor Car Co., Lansing, Mich.
RI-CHARD, Ri-Chard Auto Mfg. Co., Cleveland, O.
ROAMER, Barley Motor Car Co., Streator, Ill.
ROSS, Ross & Young Machine Co., Detroit, Mich.
RULER, Ruler Motor Car Co., Aurora, Ill.

SAXON, Saxon Motor Car Corp., Detroit, Mich.
SCRIPPS-BOOTH, Scripps-Booth Corp., Detroit, Mich.
SENECA, Seneca Motor Car Co., Fostoria, O.
SIMPLEX, Simplex Auto Co., New Brunswick, N. J.
SINGER, Singer Motor Co., New York, N. Y.
S. S. E., S. S. E. Co., Philadelphia, Penn.
STANDARD, Standard Steel Car Co., Pittsburg, Penn.
STANLEY, Stanley Motor Carriage Co., Newton, Mass.
STATES, States Motor Car Mfg. Co., Kalamazoo, Mich.
STEARNS-KNIGHT, F. B. Stearns Co., Cleveland, O.
STEINMETZ ELECTRIC, Dey Electric Corp., New York, N. Y.
STEPHENS, Stephens Motor Branch Moline Plow Co., Moline, Ill.
STUDEBAKER, Studebaker Corp., Detroit, Mich.
STUTZ, Stutz Motor Car Co., Indianapolis, Ind.

SUN, Sun Motor Car Co., Elkhart, Ind.

TEMPLAR, Templar Motors Corp., Cleveland, O.
TRUMBULL, Trumbull Motor Car Co., Philadelphia, Penn.

VELIE, Velie Motors Corp., Moline, Ill.

WAYNE-RICHMOND, Wayne Works, Richmond, Ind.
WESTCOTT, Westcott Motor Car Co., Springfield, O.
WHITE, White Motor Co., Cleveland, O.
WILLYS-KNIGHT, Willys-Overland Co., Toledo, O.
WILLYS-SIX, Willys-Overland Co., Toledo, O.
WINTON, Winton Co., Cleveland, O.
WOODS DUAL POWER, Woods Motor Vehicle Co., Chicago, Ill.

YALE, Saginaw Motor Car Co., Saginaw, Mich.

Meaning of Terms Used in Specifications

Horsepower (S. A. E.)—Horsepower in each instance is according to the rating of the Society of Automobile Engineers, whose formula has been generally accepted as standard and consists of multiplying the square of the diameter of the cylinder bore in inches by the number of cylinders and dividing by the constant 2.5. The solution of this formula gives the horsepower at 1000 feet per minute piston speed and should not be taken to indicate the maximum power of which an engine may be capable.

Piston Displacement—This designation is intended to express the space through which the pistons sweep in the cylinder during the completion of one of their strokes. This is determined by multiplying the square of the bore in inches by the constant .7854, and this result by the number of cylinders and finally that sum by the length of the stroke in inches.

Cylinders, Shape and Cast—This refers to the number of cylinders, the general contour of the engine and how the cylinders are grouped. The shapes of the engines are expressed as L-head, T-head, I-head and V. In the L-head type the valves are all on one side; in the T-head, the inlet valves are on one side and the exhaust on the other; in the I-head, the valves are in the head, or there may be one set in the head and another on one side. In the V shaped engine, the valves may be in the head or on the sides, either in the V or on the outside, or a combination of these locations. The grouping of the cylinders is expressed either by block (cylinders all integral), separately (each cylinder individual), 2s (in pairs), 3s (in groups of three each), 4s (an eight-cylinder engine in two blocks of four each), 6s (a 12-cylinder engine with two blocks of six cylinders each).

Type Camshaft Drive—Under this head appears spur, helical and chain, the first referring to a plain spur gear driving the camshaft, the second a helically cut gear and the third a silent chain drive.

Cooling System—Thermo-syphon systems, or natural flow methods, require no circulating pump. In the pump system a centrifugal pump generally is used to force the water through the cooling installation.

Lubrication System—Three systems are shown. The splash system consists of distributing the oil in the crank case by means of dips on the connecting rod ends. In the force feed the oil is pumped to the working parts through leads. The force feed and splash is a combination of the two other methods.

Ignition Type—Four systems are mentioned. The single has one source of current and one set of spark plugs. The double includes magneto and battery and two sets of plugs, of which only one set operates while the engine is running. The dual has battery and magneto and one set of plugs. Two-point ignition has double-distributor magneto and two sets of plugs which operate simultaneously.

Fuel Feed—In the gravity system the gasoline flows naturally from a tank in the cowl, or one under the seat, to the carburetor. In the vacuum system engine suction in an auxiliary tank connected with the carburetor and a tank at the rear draws the fuel to the vacuum tank from which it flows by gravity to the carburetor. In the pressure system the fuel is forced by air pressure from the rear tank direct to the carburetor.

Type of Clutch—Under this classification disc includes single and multiple plate types and those that run either in oil or dry. The cone type is too familiar to need explanation.

Type of Gearset—Selective refers to the type in which any speed is reached direct. The planetary system is distinctive because when in second speed the whole gearset turns as a unit, while the internal gears do not revolve around each other. In the progressive type it is necessary first to pass through first speed to reach higher ones. Friction drive is by a friction disc pressing against a driven disc attached to a shaft that turns the wheels. Unit with motor indicates that the gearset and clutch housings are integral with the engine—a unit power plant. Unit with rear axle means the gearset is integral with the axle housing, while amidships shows that the gearset is midway between the axle and engine.

Drive Through—This refers to whether there is a torque tube surrounding the propeller shaft, or a torque arm placed along side the shaft from the differential to a frame cross member, while springs refer to the Hotchkiss drive in which propulsion is through the rear springs.

Type of Rear Axle—In the full floating type the weight is carried on the axle housing and the axle is flexibly attached to the wheels. The ¾ floating is similar to the full floating except that the axle is permanently attached to the wheels. In the ½ floating the bearings are in the axle housing and the axle shaft not only turns the wheels, but helps support the load. The dead type is found only in cars driven by chains, the axle being stationary.

Direct Drive Ratio—The relation of the speed of the crankshaft to that of the wheels on high gear is the reference here: in other words, if the engine turns over three times to one revolution of the rear wheels on direct then the ratio is three to one.

Rear Springs—Elliptic springs take their names from their shapes. The elliptic has the form of a full ellipse; in the ¾ elliptic half of the upper member is missing; in the ½ elliptic, simply the lower portion is used. The cantilever type appears to be the ½ elliptic turned upside down. Transverse types are usually of the ½ elliptic type placed across the rear of the car. The platform type has the ½ elliptic on the sides and another transversely mounted and connected with the side members.

What the Abbreviations Indicate.

SHAPE: I, I-head; L, L-head; T, T-head; V, like letter V.

CAST: Block, cylinders integral; Sep., separately; 2s, in pairs; 3s, in threes; 4s, in two blocks of four each; 6s, in two blocks of six each.

MAKE OF MOTOR: Eagle-Mac., Eagle-Macomber; G. B. & S., Golden, Belknap & Schwartz; H.-Laughlin, Homer-Laughlin; H.-Spill., Herschell-Spillman; Mol.-Knight, Moline-Knight; R. & B., Rutenber or Beaver; Woods-Mil., Woods-Milwaukee.

VALVES: Inside, on the inner sides of the V; Outside, on the outer sides of the V; R. & H., right side and head; R. & L., right and left sides; Sleeve, Knight type of engine.

COOLING: Ther.-Syp., thermo-syphon.

LUBRICATION: Force F., force feed; F. F. & Spl., force feed and splash.

IGNITION MAKE: At. Kent., Atwater Kent; Conn., Connecticut; D.-Bijur, Delco and Bijur; Eise., Eisemann; G. & D., Gray & Davis; Split., Splitdorf; West., Westinghouse; West., B., Westinghouse and Bosch.

IGNITION CONTROL: Auto., automatic; Hand, manual; H. & A., hand and automatic.

CARBURETOR: Hol.-Kgn., Holley and Kingston; Loco. B. & B., Locomobile and Ball & Ball; Ray. or Strom., Rayfield or Stromberg.

STARTING AND LIGHTING: Heinze-Spring., Heinze-Springfield; Pil. or Auto L., Pilliod or Auto Lite; Stud.-Wagner, Studebaker-Wagner; West., Westinghouse.

GEARSET: Plan-Unit, M, planetary, in unit with engine; Selec.-Amid., selective, amidships; S-Unit, M., selective, in unit with engine; S-Unit, X, selective, in unit with rear axle.

TIRES: F. & R., front and rear wheels carry same size tires; colon between figures indicates sizes for two models; coma between figures indicates sizes of rear and front wheels on one model.

SPRINGS: Double Canti., double cantilever; ½ Ell. Cant., semi-elliptic cantilever.

BEARINGS: B. & R., ball and roller.

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FOUR-CYLINDER AMERICAN MADE GASOLINE PLEASURE CARS FOR 1917.

Data Regarding Prices, Seating Capacities and Body Types Are Given in the General Indexes on Pages 41-45.

Name of Car	Aland	Allen	Altercar	Ama Sterling	Arbenz	Auburn	Bell	Biddle	Brewster	Briscoe
No. or Name of Model	Four	37	E-17	1917	25	4-36U	17	D	Standard	B 4-24
Bore and Stroke	3.000x5.500	3.750x5.000	3.125x4.500	3.125x4.500	3.250x5.000	3.750x5.000	3.500x5.000	3.750x5.125	4.000x5.500	3.187x5.125
Horsepower (S. A. E.)	14.40	22.50	15.62	14.40	16.90	22.50	19.60	22.50	25.60	16.25
Piston Displacement	155.5	220.9	126.5	120.2	165.9	220.9	192.4	226.4	276.5	163.5
Cylinders, Shape, Cast	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-T-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block
Who Makes Motor	.....	Allen	LeRoi	Milwaukee	Lycoming	Teetor	Lycoming	Biddle	Knight	Briscoe
Location of Valves	Right	Right	Right	Right	Left	R. & L.	Right	Right	Sleeve	Right
Type Camshaft Drive	Gear	Helical	Gear	Helical	Helical	Helical	Helical	Helical	Chain	Helical
Type Cooling System	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Pump	Ther.-Syp.	Ther.-syp.	Pump	Ther.-Syp.
Lubrication System	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.	Splash	Splash	Splash	F. F. & Spl.	Force F.	F. F. & Spl.
Oil Pump	.....	Plunger	Plunger	Plunger	Plunger	Plunger	Plunger	Gear	Gear	Plunger
Ignition System Type	Single	Single	Single	Single	Single	Single	Single	Single	Single	Single
Make and Control	.....	West., hand	Allis Chalmers	Bosch, hand	Conn., hand	Conn., hand	At. Kent, hand	Dixie, hand	Bosch, hand	Conn., hand
Make of Carburetor	.....	Stromberg	Schebler	Stromberg	Carter	Rayfield	Carter	Zenith	Zenith	Buick-Carter
Method of Fuel Feed	.....	Vacuum	Vacuum	Gravity	Gravity	Vacuum	Vacuum	Vacuum	Vacuum	Gravity
Starting System Make	U. S. L.	West.	Allis Chalmers	Bosch	Disco	Auto-Lite	Gray & Davis	Gray & Davis	U. S. L.	Splitdorf
Lighting System Make	U. S. L.	West.	Allis Chalmers	Bosch	Disco	Auto-Lite	Gray & Davis	Gray & Davis	U. S. L.	Splitdorf
Type of Clutch	Disc	Cone	Disc	Disc	Cone	Disc	Disc	Disc	Cone	Cone
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	Selec.-Amid.	S-Unit, X
Speed Ratios	Three	Three	Three	Three	Three	Three	Three	Four	Three	Three
Drive Through	.....	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Torque tube	Torque rod
Type of Rear Axle	Full float.	¾ float.	¾ float.	½ float.	¾ float.	Full float.	Full float.	¾ float.	Full float.	½ float.
Direct Drive Ratio	.....	4.00-1	4.50-1	4.35-1	4.25-1	4.00-1	4.00-1	4.00-1	3.92-1	4.23-1
Wheelbase	122 inches	112 inches	106 inches	110 inches	108 inches	114 inches	112 inches	122 inches	125 inches	104 inches
Sizes of Tires	33x4, F. & R.	32x3½ F. & R.	30x3½ F. & R.	30x3½ F. & R.	30x3½ F. & R.	33x4 F. & R.	31x4 F. & R.	32x4 F. & R.	34x4½ F. & R.	30x3½ F. & R.
Wheels (Wood or Wire)	Wire	Wood	Wood	Wood	Wood	Wood	Wood	Wire	Wood	Wood
Type of Rear Springs	¾ elliptic	½ elliptic	½ elliptic	½ elliptic	Cantilever	½ elliptic	¾ elliptic	¾ elliptic	Cantilever	Elliptic
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Right, right	Left, centre
Type Gearset Bearings	.....	Ball	Ball	Roller	Ball	Ball	Ball	Ball	Ball	B. & R.
Rear Axle Bearings	.....	Ball	Roller	Roller	Roller	Ball	Roller	B. & R.	Ball	B. & R.
Front Axle Bearings	.....	Ball	Ball	Ball	Ball	Ball	Ball	Ball	Roller	Ball
No. Eng. Main Bearings	.....	Two	Three	Two	Two	Three	Three	Three	.....	Two

Name of Car	Brownie	Brunswick	Buick	Case	Chevrolet	Chevrolet	Classic	Crow.-Duryea	Crow-Elkhart	Disbrow
No. or Name of Model	49	36	D-4-34 & 35	T	4-90	F2 and F5	.....	.....	35	.....
Bore and Stroke	3.500x3.000	4.750x5.500	3.375x4.750	3.625x6.000	3.687x4.000	3.687x4.000	3.500x5.000	3.750x4.250	3.500x5.000	5.100x5.500
Horsepower (S. A. E.)	19.60	36.10	18.23	21.03	21.76	21.76	37.00	22.50	19.60	42.00
Piston Displacement	192.4	389.9	170.0	247.7	170.9	170.9	192.5	187.7	192.4	.....
Cylinders, Shape, Cast	4-L-Block	4-T-2s	4-I-Block	4-L-Block	4-I-Block	4-I-Block	4-L-Block	4-I-Block	4-L-Block	4-T-2s
Who Makes Motor	Lycoming	Wisconsin	Buick	Case	Chevrolet	Chevrolet	Lycoming	G. B. & S.	Lycoming	Wisconsin
Location of Valves	Right	R. & L.	Head	Right	Head	Head	Right	Head	Right	Head
Type Camshaft Drive	Gear	Gear	Helical	Chain	Helical	Helical	Helical	.....	Helical	Helical
Type Cooling System	Ther.-Syp.	Pump	Pump	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Pump
Lubrication System	F. F. & Spl.	Force F.	Splash	F. F. & Spl.	Splash	Splash	Splash	F. F. & Spl.	Splash	Force F.
Oil Pump	.....	.....	Gear	Plunger	Plunger	Gear	Gear	.....	Plunger	.....
Ignition System Type	.....	Single	Single	Single	Single	Single	Delco	Single	Single	Double
Make and Control	.....	Bosch, hand	Delco, hand	Conn., hand	Conn., hand	Conn., hand	Delco	Splitdorf	Conn., hand	Bosch
Make of Carburetor	Carter	Rayfield	Marvel	Rayfield	Zenith	Zenith	Carter	Schebler	Zenith	Miller
Method of Fuel Feed	Gravity	Vacuum	Vacuum	Gravity	Gravity	Pressure	Vacuum	Gravity	Gravity	Vacuum
Starting System Make	Disco	West.	Delco	Auto-Lite	Auto-Lite	Auto-Lite	Dyneto	Splitdorf	Dyneto	Bosch
Lighting System Make	Disco	West.	Delco	Auto-Lite	Auto-Lite	Auto-Lite	Dyneto	Splitdorf	Dyneto	Bosch
Type of Clutch	Cone	Disc	Cone	Cone	Cone	Cone	Cone	Special	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit M	S-Unit, M	S-Unit, M	Special	S-Unit, X	S-Amid.
Speed Ratios	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Drive Through	Springs	Springs	Springs	Torque rod	Springs	Springs	Springs	.....	Torque tube	Springs
Type of Rear Axle	½ float.	Full float.	¾ float.	¾ float.	¾ float.	¾ float.	½ float.	Dead	Full float.	Full float.
Direct Drive Ratio	.....	.....	4.10-1	4.23-1	3.67-1	4.25-1	4.50-1	.....	4.25-1	Optional
Wheelbase	112 inches	120 inches	106 inches	120 inches	102 inches	108 inches	114 inches	112 inches	114 inches	114 in.
Sizes of Tires	32x3½ F. & R.	32x4½ F. & R.	31x4 F. & R.	34x4 F. & R.	30x3½ F. & R.	32x3½ F. & R.	32x4 F. & R.	32x3½ F. & R.	32x3½ F. & R.	33x4½ F. & R.
Wheels (Wood or Wire)	Wood	Wire	Wood	Wood	Wood	Wood	Optional	Wood	Wood	Wire
Type of Rear Springs	½ elliptic	½ elliptic	½ elliptic	Cantilever	Cantilever	Cantilever	½ elliptic	¾ elliptic	¾ elliptic	Cantilever
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	.....	Roller	Ball	Roller	Ball	Ball	.....	.....	Roller	.....
Rear Axle Bearings	.....	Roller	Roller	Roller	Roller	Roller	Roller	.....	Roller	Ball
Front Axle Bearings	.....	Roller	Ball	Roller	Ball	Ball	B. & R.	.....	Ball	.....
No. Eng. Main Bearings	.....	Three	Three	Three	Three	Three	Two	.....	Two	Three

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Name of Car	Dispatch	Dixie Flyer	Dodge Bros.	Dort	Drexel	Dunn	Elcar	Emerson	Empire	Erie
No. or Name of Model	G	1917	.....	6 and 9	.....	.....	D, E and F	Four	45	33x34
Bore and Stroke	3.750x5.000	3.250x5.000	3.875x4.500	3.250x5.000	3.500x5.000	3.000x4.000	3.500x5.000	3.750x4.000	3.875x5.000	3.750x4.250
Horsepower (S. A. E.)	32.50	16.90	24.03	16.90	19.60	14.40	19.60	22.40	24.03	22.50
Piston Displacement	220.9	165.9	212.3	165.9	192.0	113.1	192.4	176.7	235.8	.....
Cylinders, Shape, Cast	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-I-Block	4-V-Block	4-L-Block	4-L-Block	4-T-Block	4-L-Block
Who Makes Motor	Wisconsin	Lycoming	Dodge	Dort	Drexel	Dunn	Lycoming	Emerson	Teetor	G. B. & S.
Location of Valves	Left	Right	Right	Right	Head	Right	Right	Right	R. & L.	Left
Type Camshaft Drive	Helical	Helical	Helical	Helical	Chain	.....	Spur	Spur	Helical	Gear
Type Cooling System	Ther.-Syp.	Ther.-Syp.	Pump	Ther.-Syp.	Ther.-Syp.	Air	Ther.-Syp.	Ther-Syp.	Ther.-Syp.	Ther.-Syp.
Lubrication System	Force F.	F. F. & Spl.	F. F. & Spl.	Splash	F. F. & Spl.	.....	F. F. & Spl.	Splash	Splash	F. F. & Spl.
Oil Pump	Gear	Plunger	Vane	Plunger	Plunger	.....	Plunger	.....	Plunger	Gear
Ignition System Type	Single	Double	Single	Single	Single	Single	Single	Single	Single	Single
Make and Control	Bosch, hand	Conn., hand	Delco, auto.	Conn., hand	Bosch, hand	At. Kent	Delco, H. & A.	At. Kent	Conn., hand	Dixie, hand
Make of Carburetor	Rayfield	Carter	Stewart	Carter	Stromberg	.....	Carter	Kingston	Stromberg	Stromberg
Method of Fuel Feed	Gravity	Vacuum	Vacuum	Gravity	Vacuum	Gravity	Vacuum	Vacuum	Vacuum	Gravity
Starting System Make	U. S. L.	Dyneto	North East	West.	Bijur	.....	Dyneto	Apelco	Auto-Lite	Dyneto
Lighting System Make	U. S. L.	Dyneto	North East	West.	Bijur	.....	Dyneto	Apelco	Auto-Lite	Dyneto
Type of Clutch	Special	Cone	Disc	Cone	Cone	Cone	Disc	Disc	Cone	Disc
Type of Gearset	Special	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Four	Three	Three	Three	Three	Two	Three	Three	Three	Three
Drive Through	Radius rod	Torque tube	Springs	Springs	Torque arm	Springs	Springs	Springs	Springs	Torque rod
Type of Rear Axle	Dead	Full float.	Full float.	¾ float.	Full float.	½ Float.	Full float.	½ float.	Full float.	¾ float.
Direct Drive Ratio	3.12-1	4.75-1	3.615-1	4.41-1	4.25-1	.....	4.00-1	4.25-1	4.00-1	4.00-1, 3.75-1
Wheelbase	120 inches	112 inches	114 inches	105 inches	112 inches	84 inches	115 inches	110 inches	116 inches	118 inches
Sizes of Tires	36x3½ F. & R.	32x3½ F. & R.	32x3½ F. & R.	30x3½ F. & R.	33x4 F. & R.	28x2½ F. & R.	32x3½ F. & R.	30x3, 30x3½	33x4 F. & R.	33x4 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Wood	Wire	Wood	Wood	Wood	Optional
Type of Rear Springs	Elliptic	¾ elliptic	¾ elliptic	Cantilever	¾ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	¾ elliptic
Drive and Control	Left, right	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Ball	Ball	Ball	Ball	Ball	.....	Ball	Ball	Ball	Ball
Rear Axle Bearings	Ball	Roller	Roller	B. & R.	Roller	.....	Roller	Roller	B. & R.	Roller
Front Axle Bearings	Ball	Ball	Roller	Ball	Ball	.....	Ball	Ball	Ball	Ball
No. Eng. Main Bearings	Three	Two	Three	Two	Two	.....	Two	Three	.....	Three

Name of Car	Fiat	Ford	Frontmobile	F. R. P.	Ghent	Great Eagle	Hackett	Harroun	Harvard	Hassler
No. or Name of Model	55-F17	T	.....	45-A 45-B	Four 30	4-50	Four	.....	4-25	C
Bore and Stroke	5.125x6.750	3.750x4.000	3.125x4.500	4.600x6.750	3.750x4.250	4.750x5.500	3.750x4.250	3.250x5.250	3.000x4.250	3.750x5.125
Horsepower (S. A. E.)	42.03	22.50	16.90	33.80	22.50	30.60	22.50	16.90	14.40	22.50
Piston Displacement	557.0	176.7	.....	448.0	187.7	389.9	.....	174.2	120.20	.....
Cylinders, Shape, Cast	4-L-Block	4-L-Block	4-L-Block	4-I-Block	4-L-Block	4-T-2s	4-L-Block	4-I-Block	4-I-Block	4-L-Block
Who Makes Motor	Fiat	Ford	Le Roi	Porter	G. B. & S.	Wisconsin	G. B. & S.	.....	Sterling	Buda
Location of Valves	Left	Right	Head	Head	Right	R. & L.	Left	Head	Head	Left
Type Camshaft Drive	Helical	Spur	Helical	Worm	Gear	.....	Chain	.....	Helical	Helical
Type Cooling System	Pump	Ther.-Syp.	Ther.-syp.	Pump	Ther.-Syp.	Pump	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.
Lubrication System	Force F.	Splash	F. & Spl.	F. F. & Spl.	F. F. & Spl.	Force F.	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.	Force F.
Oil Pump	Gear	.....	.....	Plunger	.....	.....	Plunger	.....	Gear	.....
Ignition System Type	Dual	Single	Single	Single	Single	.....	Double	Single	Single	Single
Make and Control	Bosch, hand	Ford, hand	Conn., hand	Bosch, hand	G. & D., hand	Bosch	Conn., hand	.....	At. Kt., hand	Conn., hand
Make of Carburetor	Zenith-Fiat	Hol.-Kgn.	Schebler	Longuemare	Carter	Stromberg	Carter	Special	Zenith	Rayfield
Method of Fuel Feed	Pressure	Gravity	Gravity	Pressure	Vacuum	Vacuum	Gravity	Gravity	Gravity	Vacuum
Starting System Make	West.	None	Allis Chalmers	Bosch	Gray & Davis	West.	Dyneto	.....	Wagner	Auto Lite
Lighting System Make	West.	Ford	Allis Chalmers	Bosch	Gray & Davis	West.	Dyneto	.....	Wagner	Auto Lite
Type of Clutch	Disc	Disc	Disc	Cone	Disc	Disc	Disc	Cone	Cone	Disc
Type of Gearset	Selec.-Amid.	Plan.-Unit, M	Front of motor	Selec.-Amid.	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Four	Two	Three	Four	Three	Three	Three	Three	Three	Three
Drive Through	Torque tube	Torque tube	Front wheels	Springs	Springs	Radius rod	Springs	.....	Springs	Radius rods
Type of Rear Axle	¼ float.	½ float.	Special float.	Full float	¾ float.	Full float.	½ float.	Full float.	½ float.	Full float.
Direct Drive Ratio	2.70-1	3.63-1	.....	2.75-1, 2.60-1	4.25-1	4.08-1	4.00-1	.....	4.00-1	3.70-1
Wheelbase	140 inches	100 inches	112 in.	110, 140 in	120 inches	143 inches	112 inches	107 inches	100 inches	112 in.
Sizes of Tires	35x5 F. & R.	30x3, 30x3½	32x3½ F. & R.	32x3½, 36x5	31x4 F. & R.	37x5 F. & R.	32x3½ F. & R.	30x3½ F & R.	28x3 F. & R.	33x4 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wire	Steel	Wood	Wood	Wood	Optional	Wire
Type of Rear Springs	¼ elliptic	Transverse	Cantilever	¼ elliptic	¼ elliptic	Platform	¾ elliptic	Cantilever	Cantilever	Special
Drive and Control	Right	Left	Left, centre	Right	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Ball	.....	.....	Ball	Ball	Roller	B. & R.	.....	Ball	Ball
Rear Axle Bearings	Ball	Roller	.....	Ball	Ball	Roller	B. & R.	.....	B. & R.	B. & R.
Front Axle Bearings	Ball	Ball	.....	Ball	Ball	Roller	Ball	.....	Ball	Roller
No. Eng. Main Bearings	Three	Three	.....	.....	Three	Three	Three	.....	.....	.....

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FOUR-CYLINDER AMERICAN MADE GASOLINE PLEASURE CARS FOR 1917.

Data Regarding Prices, Seating Capacities and Body Types Are Given in the General Indexes on Pages 41-45.

Name of Car	Hatfield	Hesseltine	Hupmobile	Inter-State	Jeffery	Kent	Lambert	Laurel	Lozier	Macon
No. or Name of Model	A, H & I.	.....	N	Six Models	4	.....	90	56	84	A
Bore and Stroke	3.750x4.250	3.125x4.500	3.750x5.500	3.500x5.000	3.750x5.250	3.750x5.000	4.250x5.250	3.750x4.250	4.250x6.500	3.000x4.250
Horsepower (S. A. E.)	22.50	16.90	22.50	19.60	22.50	22.50	35.00	22.50	28.00	14.40
Piston Displacement	157.7	138.4	242.0	192.4	231.9	220.9	297.8	187.7	368.8	120.2
Cylinders, Shape, Cast	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Sep.	4-L-Block	4-L-Block	4-T-Block
Who Makes Motor	G. B. & S.	LeRoi	Hupmobile	R. & B.	Nash	Continental	Rutenber	G. B. & S.	Lozier	.....
Location of Valves	Right	Right	Left	Left	Right	Right	Right	Right	Right	Head
Type Camshaft Drive	Chain	Gear	Chain	Gear	Helical	Gear	Spur	.....	Chain	Helical
Type Cooling System	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Pump	Ther.-Syp.	Pump	Ther.-Syp.	Pump	Ther.-Syp.
Lubrication System	F. F. & Spl.	F. F. & Spl.	Force F.	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.	Splash	F. F. & Spl.	Force F.	F. F. & Spl.
Oil Pump	.....	Plunger	Gear	Gear	Plunger	Gear	.....	Gear	Gear	.....
Ignition System Type	Single	Single	Single	Single	Single	Single	Single	Single	Duplex	Single
Make and Control	Conn., hand	Bosch, hand	At. Kt., H. & A.	Remy, hand	Dixie, hand	Bosch, hand	Remy, auto.	Dixie, hand	Bosch, hand	.....
Make of Carburetor	Stromberg	Gem	Zenith	Schebler	Stromberg	Zenith	Schebler	Schebler	Stewart	Zenith
Method of Fuel Feed	Vacuum	Gravity	Gravity	Gravity	Vacuum	Vacuum	Vacuum	Gravity	Pressure	Vacuum
Starting System Make	Dyneto	Allis-Chalmers	West.	Remy	Bijur	Bosch	Remy	Disco	Gray & Davis	Wagner
Lighting System Make	Dyneto	Allis-Chalmers	West.	Remy	Bijur	Bosch	Remy	Disco	Gray & Davis	Wagner
Type of Clutch	Disc	Disc	Disc	Cone	Disc	Disc	Friction	Disc	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	.....	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Three	Three	Three	Three	Three	Three	Three	Three	Four	Three
Drive Through	Springs	Springs	Springs	Torque tube	Springs	Springs	.....	Springs	Springs	.....
Type of Rear Axle	Full float.	¾ float.	¾ float.	Full float.	½ float.	¾ float.	½ float.	Full float.	Full float.	½ Float.
Direct Drive Ratio	4.25-1	.....	4.64-1	4.00-1	4.50-1	4.08-1	3.00-1	4.25-1	1.00-1	.....
Wheelbase	115 & 106 in.	106 inches	119 & 134 in.	110 inches	116 inches	116 inches	120 inches	112 inches	120 inches	114 inches
Sizes of Tires	32x4 & 31x4	30x3½ F. & R.	34x4, 35x4½	33x4 F. & R.	34x4, F. & R.	32x4, F. & R.	34x3½, F. & R.	32x3½ F. & R.	36x4½ F. & R.	32x3½ F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Wood	Optional	Wood	Wood	Wood	Wood
Type of Rear Springs	½ ell.. cant.	½ elliptic	½ elliptic	¾ elliptic	¾ elliptic	¾ elliptic	Full elliptic	Cantilever	Platform	½ elliptic
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, Right	Right, right	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Ball	.....	B. & R.	Roller	Roller	Ball	.....	Ball	Roller	.....
Rear Axle Bearings	Roller	.....	Ball	Roller	Roller	Roller	Roller	Roller	Roller	.....
Front Axle Bearings	Ball	.....	Roller	Ball	Roller	Roller	Ball	Ball	Roller	.....
No. Eng. Main Bearings	Three	.....	Three	Three	Three	.....	Three	Three	Three	.....

Name of Car	Malbohm Four	Maxwell	Mercer	Metz	Moline-Knight	Moline-Knight	Monitor	Monroe	Monroe	Moore 30
No. or Name of Model	A	25	22-73	25	G	40-C	C. & R.	M-4	M-3	H. G. M.
Bore and Stroke	3.125x4.000	3.625x4.500	3.750x6.750	3.875x4.000	4.000x6.000	3.750x5.000	3.750x4.250	3.250x4.500	3.000x4.250	3.750x4.250
Horsepower (S. A. E.)	15.625	21.03	22.50	24.03	25.60	22.50	22.50	16.90	14.05	22.50
Piston Displacement	122.7	185.8	298.2	188.7	301.6	220.9	187.7	150.0	120.2	187.9
Cylinders, Shape, Cast	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block
Who Makes Motor	Malbohm	Maxwell	Mercer	Metz	Mol.-Knight	Mol-Knight	G. B. & S.	Monroe	Sterling	Special
Location of Valves	Head	Right	Right	Right	Sleeve	Sleeve	Left	Head	Head	Left
Type Camshaft Drive	Helical	Helical	Chain	Spur	Chain	Chain	Chain	Helical	Helical	Chain
Type Cooling System	Ther.-Syp.	Ther.-Syp.	Pump	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.
Lubrication System	F. F. & Spl.	F. F. & Spl.	Force F.	Splash	Force F.	Force F.	F. F. & Spl.	Force F.	Splash	F. F. & Spl.
Oil Pump	Gear	Plunger	Gear	Gear	Gear	Gear	.....	Gear	Piston	.....
Ignition System Type	Single	Single	Single	Single	Single	Single	Single	Single	Single	Single
Make and Control	At. Kt., hand	At. Kt., hand	Bosch, hand	Dixie, hand	Conn., hand	Conn., hand	Heinze	Conn., hand	Conn., hand	Dixie, hand
Make of Carburetor	Zenith	K. D.	Corser	A. W. T.	Schebler	Schebler	Schebler	Zenith	Zenith	Schebler
Method of Fuel Feed	Gravity	Gravity	Vacuum	Gravity	Vacuum	Vacuum	Vacuum	Vacuum	Gravity	Vacuum
Starting System Make	Disco	Simms-Huff	U. S. L.	Gray & Davis	Auto-Lite	Auto-Lite	Heinze	Auto-Lite	Auto-Lite	Disco
Lighting System Make	Disco	Simms-Huff	U. S. L.	Gray & Davis	Wagner	Wagner	Heinze	Auto-Lite	Auto-Lite	Disco
Type of Clutch	Disc	Cone	Disc	.....	Cone	Cone	Disc	Disc	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	Selec. Amid.	Metz, gearless	Selec.-Amid.	Selec.-Amid.	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Three	Three	Four	Seven	Three	Three	Three	Three	Three	Three
Drive Through	Springs	Springs	Springs	.....	Torque rods	Torque rods	Springs	Torque rods	Springs	Springs
Type of Rear Axle	½ float.	¾ float.	Full float.	Special	¾ float.	½ float.	½ float.	Special	¾ float.	Full float.
Direct Drive Ratio	4.00-1	3.58-1	.....	.....	4.00-1	4.40-1	4.00-1	4.75-1	4.25-1	3.875-1
Wheelbase	105 inches	103 inches	115 and 132 in.	108 inches	122 inches	118 inches	108 inches	115 inches	96 inches	106 inches
Sizes of Tires	30x3½ F. & R.	30x3½ F. & R.	32x4, 34x4½	32x3½ F. & R.	35x4½ F. & R.	34x4 F. & R.	32x3½ F. & R.	32x4 F. & R.	30x3 F. & R.	30x3½ F. & R.
Wheels (Wood or Wire)	Optional	Wood	Optional	Optional	Wood	Wood	Wood	Wood	Wood	Wood
Type of Rear Springs	½ elliptic	¾ elliptic	½ elliptic	Elliptic	Special	Special	¾ elliptic	Cantilever	¾ elliptic	Cantilever
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Ball	Roller	Ball	None	Ball	Ball	Ball	Ball	Ball	Ball
Rear Axle Bearings	Roller	Roller	B. & R.	Roller	B. & R.	Roller	Roller	B. & R.	B. & R.	B. & R.
Front Axle Bearings	Ball	Ball	Roller	Ball	Ball	Roller	Ball	Roller	B. & R.	Ball
No. Eng. Main Bearings	Two	Two	Three	Three	Three	Three	Three	Two	Two	Three

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Name of Car	Napoleon	Nelson	Olympian	Overland	Overland	Packet	Partin-Palmer	Partin-Palmer	Pennsy	Phianna
No. or Name of Model	30	.....	.....	85-4	Country Club	.....	20	32	R	M
Bore and Stroke	3.500x5.000	3.125x4.750	3.750x4.250	4.125x4.500	3.375x5.000	3.500x5.000	3.125x4.500	3.500x5.000	3.500x5.000	3.906x6.000
Horsepower (S. A. E.)	19.60	16.90	22.50	27.20	18.25	19.60	15.63	19.60	19.60	24.00
Piston Displacement	192.4	145.7	187.9	240.0	179.0	192.4	138.1	192.4	192.4	292.2
Cylinders, Shape, Cast	4-L-Block	4-T-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block
Who Makes Motor	Lycoming	Nelson	G. B. & S.	Overland	Overland	Lycoming	LeRoi	Lycoming	Lycoming	Phianna
Location of Valves	Right	Head	Left	Right	Right	Right	Right	Left	Right	Right
Type Camshaft Drive	Helical	Overhead	Chain	Helical	Helical	Chain	Helical	Helical	Gear	Chain
Type Cooling System	Ther.-Syp.	Ther.-syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Pump
Lubrication System	F. F & Spl.	Force F.	F. F. & Spl.	Splash	Splash	F. F. & Spl.	Splash	Splash	F. F. & Spl.	Force F.
Oil Pump	Plunger	.....	Plunger	Gear	Plunger	.....	Plunger	Plunger	Plunger	Gear
Ignition System Type	Dual	Single	Single	Single	Single	Single	Single	Single	Single	Single
Make and Control	Conn., H. & A.	Bosch spec.	Conn., auto.	Conn., hand	Conn., hand	At. Kent	Conn., hand	Conn., hand	Conn., hand	Bosch, hand
Make of Carburetor	Carter	Zenith	Zenith	Tillotson	Tillotson	Carter	Schebler	Carter	Zenith	H. & N.
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Gravity	Gravity	Gravity	Vacuum	Vacuum
Starting System Make	Dyneto	U. S. L. spec.	Auto-Lite	Auto-Lite	Auto-Lite	.....	Allis Chalmers	Disco	Dyneto	Ward-Leonard
Lighting System Make	Dyneto	U. S. L. spec.	Auto-Lite	Auto-Lite	Auto-Lite	.....	Allis Chalmers	Disco	Dyneto	Ward-Leonard
Type of Clutch	Disc	Disc	Disc	Cone	Cone	Disc	Disc	Disc	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit X	S-Unit, M	S-Unit, X	S-Unit, X	Friction	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Three	Three	Three	Three	Three	Three	Three	Three	Three	Four
Drive Through	Torque rods	Springs	Springs	Torque rod	Torque rod	Chain	Radius rods	Springs	Springs	Springs
Type of Rear Axle	Full float.	Full float.	Full float.	¾ float.	Full float.	Dead	Full float.	Full float.	½ float.	Full float.
Direct Drive Ratio	4.00-1	4.25-1	4.50-1	4.00-1	3.75-1	.....	4.00-1	4.00-1	4.00-1	4.30-1
Wheelbase	112 inches	104 in.	114 inches	112 inches	104 inches	100 inches	96 inches	110 inches	115 inches	125 inches
Sizes of Tires	31x4 F. & R.	32x4 F. & R.	32x3½, F. & R.	32x4 F. & R.	31x4 F. & R.	28x3 F. & R.	30x3½ F. & R.	32x3½ F. & R.	32x4 F. & R.	32x4½, F. & R.
Wheels (Wood or Wire)	Wood	Wood	Optional	Wood	Wire	Wood	Wood	Wood	Wood	Optional
Type of Rear Springs	Cantilever	Special	Cantilever	Cantilever	Cantilever	.....	¾ elliptic	¾ elliptic	½ elliptic	Cantilever
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Centre, centre
Type Gearset Bearings	Ball	.....	Ball	B. & R.	B. & R.	.....	Ball	Ball	Ball	Ball
Rear Axle Bearings	Roller	.....	B. & R.	B. & R.	B. & R.	.....	Ball	Ball	B. & R.	Roller
Front Axle Bearings	Ball	.....	Ball	Roller	Roller	.....	Ball	Ball	Ball	B. & R.
No. Eng. Main Bearings	Two	Two	Three	Five	Two	.....	Two	Two	Two	Three

Name of Car	Pilgrim	Pilliod	Princess	Pullman	Regal	Reo	Ri-Chard	Ruler	Saxon	Seneca
No. or Name of Model	Pilgrim	F	4-36	424	J	R	1917	.....	B5R B6R	4-27
Bore and Stroke	3.750x4.250	4.125x5.000	3.750x4.250	3.750x4.250	3.500x4.750	4.125x4.500	4.000x9.000	3.250x5.000	2.750x4.000	3.121x4.500
Horsepower (S. A. E.)	23.00	28.00	22.50	22.50	19.60	27.23	25.60	16.90	12.10	16.90
Piston Displacement	187.9	267.3	187.7	187.7	183.0	240.5	.....	165.9	95.0	141.0
Cylinders, Shape, Cast	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-Block	4-L-2s	4-T-Block	4-L-Block	4-L-Block	4-L-Block
Who Makes Motor	G. B. & S.	Pilliod	G. B. & S.	G. B. & S.	Regal	Reo	Ri-Chard	Ruler	Continental	LeRoi
Location of Valves	Left	Sleeve	Left	Right	Left	R. & H.	Side	Head	Right	Right
Type Camshaft Drive	Chain	Chain	Helical	Chain	Helical	Helical	Helical	Chain	Helical	Gear
Type Cooling System	Ther.-Syp.	Pump	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Pump	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.
Lubrication System	F. F. & Spl.	Force F.	F. F. & Spl.	Splash	Splash	Splash	Force F.	Splash	Splash	Splash
Oil Pump	.....	Gear	.....	.....	Plunger	Plunger	.....	.....	Plunger	Plunger
Ignition System Type	Single	Single	Single	Single	Single	Single	Single	.....	Single	Single
Make and Control	Dixie, hand	Conn., hand	Splitdorf, hand	Dixie, hand	Heinze, hand	Remy, hand	Bosch, H. & A.	.....	At. Kt., auto.	Remy, hand
Make of Carburetor	Zenith	Stewart	Schebler	Stromberg	Carter	Johnson	Ri-Chard	.....	Reichenbach	Zenith
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Gravity	Vacuum	Gravity	Gravity	Vacuum
Starting System Make	Ward-Leonard	Pil. or Auto L.	Disco	Apelco	Heinze-Spring.	Remy	West.	.....	Wagner	Allis Chalmers
Lighting System Make	Ward-Leonard	Pil. or Auto L.	Disco	Apelco	Heinze-Spring.	Remy	West.	.....	Wagner	Allis Chalmers
Type of Clutch	Disc	Disc	Disc	Disc	Cone	Disc	Cone	Disc	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	Selec.-Amid.	.....	S-Unit, M	S-Unit, X	S-Unit, M
Speed Ratios	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Drive Through	Springs	Torque arm	Springs	Springs	Torque rod	Springs	.....	.....	Torque rod	Springs
Type of Rear Axle	Full float.	Full float.	Full float.	Full float.	Full float.	½ float.	Full float.	Full float.	½ float.	Full float.
Direct Drive Ratio	4.00-1	4.09-1	4.00-1	4.50-1	4.25-1	4.307-1	2.00-1	.....	5.00-1	4.00-1
Wheelbase	112 inches	120 inches	108 inches	114 inches	108 inches	115 inches	137 inches	120 inches	96 inches	108 inches
Sizes of Tires	32x3½ F. & R.	34x4 F. & R.	32x3½ F. & R.	31x4 F. & R.	30x3½ F. & R.	34x4 F. & R.	34x6 F. & R.	32x3 F. & R.	30x3 F. & R.	30x3½ F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Wood	Wood	Optional	Wire	Wood	Wood
Type of Rear Springs	½ elliptic	Cantilever	¾ elliptic	Cantilever	Cantilever	¾ elliptic	½ elliptic	Cantilever	Cantilever	Cantilever
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Ball	Ball	.....	Ball	Ball	Roller	Ball	.....	Plain	B. & R.
Rear Axle Bearings	B. & R.	Ball	Ball	Roller	Roller	Roller	Ball	.....	Roller	B. & R.
Front Axle Bearings	B. & R.	Ball	Ball	Ball	Ball	Roller	Ball	.....	Ball	Ball
No. Eng. Main Bearings	Three	Three	Three	Three	Three	Three	Three	Two	Two	Two

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FOUR-CYLINDER AMERICAN MADE GASOLINE PLEASURE CARS FOR 1917.

Data Regarding Prices, Seating Capacities and Body Types Are Given in the General Indexes on Pages 41-45.

Name of Car	States	Stearns-Knight	Studebaker	Stutz	Templar	Trumbull	Wayne-Rich.	White	White	Willys-Knight
No. or Name of Model	B	32	4-40	R. & B'ldog S.	445	16 B	4-35	16-valve "4"	16 Valve 4	88-4
Bore and Stroke	3.750x4.250	3.375x5.125	3.875x5.000	4.750x5.500	3.375x5.500	2.875x4.000	4.000x4.500	4.250x5.750	4.250x5.700	4.125x4.500
Horsepower (S. A. E.)	25.00	18.23	24.03	36.10	18.20	13.23	25.60	28.90	28.90	27.25
Piston Displacement	188.0	226.4	235.8	389.9	197.0	103.7	226.2	326.3	326.3	240.5
Cylinders, Shape, Cast	4-L-Block	4-L-Block	4-L-Block	4-T-2s	4-L-Block	4-L-Block	4-L-Block	4-T-Block	4-T-Block	4-L-Block
Who Makes Motor	G. B. & S.	Stearns	Studebaker	Wisconsin	Templar	Milwaukee	Wayne	White	White	Willys-Knight
Location of Valves	Left	Sleeve	Left	R. & L.	Head	Right	Right	R. & L.	R. & L.	Sleeve
Type Camshaft Drive	Chain	Gear	Helical	Spur	Chain	Helical	Gear	Helical	Helical	Chain
Type Cooling System	Ther.-Syp.	Pump	Pump	Pump	Pump	Ther.-Syp.	Ther.-Syp.	Pump	Pump	Ther.-Syp.
Lubrication System	F. F. & Spl.	F. F. & Spl.	Splash	Force F.	Force F.	Splash	F. F. & Spl.	Force F.	Force F.	F. F. & Spl.
Oil Pump	Plunger	Gear	Gear	Gear	Gear	Plunger	.....	Gear	Gear	Plunger
Ignition System Type	Single	Single	Single	Single	Single	Single	Single	Single	Single	Single
Make and Control	Conn., hand	Remy	Remy, hand	Bosch, hand	Remy, hand	Splitdorf, hand	Dixie	.....	.....	Conn., hand
Make of Carburetor	Schebler	Schebler	Schebler	Stromberg	Zenith	Zephyr	Stromberg	White	White	Tillotson
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Pressure	Vacuum	Gravity	.....	Vacuum	Vacuum	Vacuum
Starting System Make	Dyneto	West.	Stud.-Wagner	Remy	Remy	Ward-Leonard	Apelco	Leece-Neville	Leece-Neville	Auto-Lite
Lighting System Make	Dyneto	West.	Stud.-Wagner	Remy	Remy	Ward-Leonard	Apelco	Leece-Neville	Leece-Neville	Auto-Lite
Type of Clutch	Disc	Cone	Cone	Cone	Disc	Disc	Cone	Disc	Disc	Cone
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, X	S-Unit, X	S-Unit, M	S-Unit, X	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, X
Speed Ratios	Three	Three	Three	Three	.....	Three	Three	Four	Four	Three
Drive Through	Springs	Springs	Radius rod	Radius rod	Springs	Torque rod	.....	Springs	Springs	Torque rod
Type of Rear Axle	Full float.	½ float.	Full float.	¾ float.	½ float.	½ float.	½ float.	½ float.	½ float.	Full float.
Direct Drive Ratio	4.00-1	4.50-1	4.00-1	3.06-1	4.43-1	3.60-1	.....	.....	.....	4.30-1
Wheelbase	112 inches	119 inches	112 inches	130 inches	120 inches	80 inches	110 inches	137½ inches	124½ inches	121 inches
Sizes of Tires	32x3½ F. & R.	34x4 F. & R.	35x4½ F. & R.	34x4½ F. & R.	32x4 F. & R.	28x3, F. & R.	33x4 F. & R.	37x5 F. & R.	37x5 F. & R.	34x4½ F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wire	Optional	Wire	Wood	Wood	Wood	Wood
Type of Rear Springs	¾ elliptic	Cantilever	¾ elliptic	½ elliptic	½ elliptic	¾ elliptic	.....	½ elliptic	½ elliptic	Cantilever
Drive and Control	Left, centre	Left, centre	Left, centre	Right, right	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Ball	B. & R.	Roller	Ball	Ball	Ball	.....	Ball	Ball	B. & R.
Rear Axle Bearings	B. & R.	B. & R.	Roller	B. & R.	Roller	B. & R.	.....	Ball	Ball	Roller
Front Axle Bearings	Ball	Ball	Roller	B. & R.	Roller	Ball	.....	Ball	Ball	B. & R.
No. Eng. Main Bearing	Three	Three	Three	Three	Three	Two	.....	Three	Three	Three

THE SIX-CYLINDER PLEASURE CAR MODELS OFFERED FOR 1917.

Name of Car	Woods Dual P.	Abbott-Detroit	Altercar	American Six	Anderson	Apperson	Auburn	Auburn	Austin	Austin
No. or Name of Model	44	6-44	F-17	A	Six-40	6-17	6-44	6-39	48-66	36-66
Bore and Stroke	2.500x3.500	3.250x4.500	3.000x4.250	3.000x5.000	3.250x4.500	3.500x5.000	3.500x5.250	3.125x5.000	4.500x6.000	3.875x5.250
Horsepower (S. A. E.)	10.00	25.35	21.60	21.60	25.35	29.40	29.40	23.44	48.00	36.00
Piston Displacement	68.8	224.0	180.3	212.0	224.0	288.6	303.1	230.1	572.0	371.0
Cylinders, Shape, Cast	4-L-Block	6-L-Block	6-I-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-T-Block	6-T-Block
Who Makes Motor	Woods-Mil.	Continental	Falls	Amco	Continental	Apperson	Continental	Teetor	Teetor	Teetor
Location of Valves	Right	Right	Head	Left	Right	Right	Right	Right	Head	Head
Type Camshaft Drive	Helical	Helical	Gear	Helical	Gear	Helical	Helical	Helical	Gear	Gear
Type Cooling System	Ther.-Syp.	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump
Lubrication System	Force F.	F. F. & Spl.	F. F. & Spl.	Splash	Force F.	Force F.	Splash	Splash	Force F.	Force F.
Oil Pump	Gear	Plunger	Plunger	Plunger	Plunger	Gear	Plunger	Plunger	.....	.....
Ignition System Type	Single	Single	Single	Single	Double	Dual	Single	Single	Two point	Two point
Make and Control	At. Kt., auto.	Remy, hand	Allis Chalmers	G. & D, hand	West., hand	Remy, hand	Delco, H. & A.	Remy, H. & A.	Bosch, hand	Bosch, hand
Make of Carburetor	Zephyr	Stromberg	Stewart	Zenith	Zenith	Rayfield	Rayfield	Rayfield	Master	Master
Method of Fuel Feed	Gravity	Vacuum	Vacuum	Gravity	Gravity	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Starting System Make	None	Remy	Allis Chalmers	Gray & Davis	West.	Bijur	Delco	Remy	Bosch	Bosch
Lighting System Make	None	Remy	Allis Chalmers	Gray & Davis	West.	Bijur	Delco	Remy	Bosch	Bosch
Type of Clutch	Magnetic	Disc	Cone	Disc	Disc	Disc	Disc	Disc	Disc	Disc
Type of Gearset	Magnetic	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	Selec.-Amid.	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	.....	Three	Three	Three	Three	Three	Three	Three	6, 2 Reverse	6, 2 Reverse
Drive Through	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs
Type of Rear Axle	¼ float.	¾ float.	¾ float.	¾ float.	½ float.	½ float.	Full float.	Full float.	Full float.	Full float.
Direct Drive Ratio	8.25-1	4.42-1, 4.75-1	4.50-1	4.43-1	4.42-1	3.92-1, 4.25-1	4.00-1	4.42-1	5.25-1	5.25-1
Wheelbase	110 inches	122 inches	114 inches	122 inches	120 inches	128 inches	131 inches	120 inches	142 inches	142 inches
Sizes of Tires	34x4 F. & R.	32x4, 33x4½	32x3½ F. & R.	32x4 F. & R.	33x4 F. & R.	34x4 F. & R.	35x4½ F. & R.	34x4, F. & R.	34x4½, F. & R.	34x4½ F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood
Type of Rear Springs	Cantilever	½ elliptic	½ elliptic	½ elliptic	½ elliptic	¾ elliptic	Cantilever	¼ elliptic	Double Canti.	Double Canti.
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	None	Ball	Ball	Ball	Ball	Roller	Ball	Ball	Ball	Ball
Rear Axle Bearings	Ball	B. & R.	Roller	B. & R.	Ball	Roller	Roller	Roller	Ball	Ball
Front Axle Bearings	Roller	Roller	Ball	Ball	Ball	Roller	Ball	Ball	Roller	Roller
No. Eng. Main Bearings	Two	Three	Three	Three	Three	Four	Three	Three	Four	Four

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Name of Car	Ben-Hur	Bour-Davis	Buick	Cameron	Chalmers	Chandler	Charter Oak	Chicago	Colonial	Columbia
No. or Name of Model	17	17	Four models	1917	Six 30	17	A	Six-Forty	35	Six
Bore and Stroke	3.500x5.250	3.250x4.500	3.250x4.500	3.000x5.000	3.250x4.500	3.375x5.000	4.000x5.500	3.125x5.000	3.000x4.500	3.250x4.500
Horsepower (S. A. E.)	29.40	25.30	25.35	21.60	25.40	27.40	38.40	23.40	21.60	21.60
Piston Displacement	303.0	224.0	224.0	212.0	224.0	268.4	414.7	230.1	190.8	.....
Cylinders, Shape, Cast	6-L-Block	6-L-Block	6-I-Block	6-L-Block	6-L-Block	6-L-2s	6-T-Block	6-L-Block	6-I-Block	6-L-Block
Who Makes Motor	Buda	Continental	Buick	Amco	Chalmers	Chandler	H.-Spill.	Rutenber	Falls	Continental
Location of Valves	Right	Right	Head	Right	Left	Right	Sides	Head	Head	Right
Type Camshaft Drive	Helical	Gear	Helical	Helical	Helical	Chain	Spur	Helical	Gear	.....
Type Cooling System	Pump	Pump	Pump	Pump	Ther.-Syp.	Pump	Pump	Pump	Ther.-Syp.	Pump
Lubrication System	F. F. & Spl.	F. F. & Spl.	Splash	F. F. & Spl.	F. F. & Spl.	Splash	Force F.	F. F. & Spl.	F. F. & Spl.	Force F.
Oil Pump	Gear	Gear	Gear	Plunger	Gear	Plunger	Gear	Plunger	.....	.....
Ignition System Type	Single	Single	Single	Single	Single	Single	Double	Single	Single	Single
Make and Control	Bosch, hand	Remy, hand	Delco, H. & A.	G. & D., hand	Remy, H. & A.	Bosch, hand	Bosch, hand	G. & D., hand	Remy, hand	Warner, hand
Make of Carburetor	.....	Stromberg	Marvel	Zenith	Stromberg	Rayfield	Rayfield	Rayfield	Stewart	Stromberg
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Gravity	Vacuum	Vacuum	Vacuum
Starting System Make	West.	Gray & Davis	Delco	Gray & Davis	West.	Gray & Davis	West.	Gray & Davis	Allis Chalmers	Ward-Leonard
Lighting System Make	West.	Gray & Davis	Delco	Gray & Davis	West.	Gray & Davis	West.	Gray & Davis	Allis Chalmers	Ward-Leonard
Type of Clutch	Disc	Disc	Cone	Cone	Disc	Disc	Disc	Disc	Cone	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Three	Three	Three	Three	Three	Three	Four	Three	Three	Three
Drive Through	Springs	Springs	Torque rod	Torque rod	Springs	Springs	Springs	Springs	.....	Springs
Type of Rear Axle	Float.	¾ float.	Full float.	Full float.	½ float.	¾ float.	Full float.	¾ float.	Full float.	¾ float.
Direct Drive Ratio	4.45-1	4.42-1	4.32-1	4.00-1	4.75-1, 5.18-1	4.40-1	3.77-1	4.25-1	4.00-1	4.75-1
Wheelbase	126 inches	118 inches	115 inches	122 inches	115 & 122 in.	123 inches	135 in.	120 inches	116 in.	115 inches
Sizes of Tires	35x4½ F. & R.	32x4 F. & R.	34x4, 35x4½	32x4 F. & R.	32x4, 34x4	34x4 F. & R.	35x5 F. & R.	32x4 F. & R.	32x3½ F. & R.	32x4 F. & R.
Wheels (Wood or Wire)	Wire	Optional	Wood	Wire	Wood	Wood	Optional	Wood	Wood	Optional
Type of Rear Springs	½ elliptic	½ elliptic	Cantilever	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	Cantilever
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Ball	B. & R.	Ball	B. & R.	Roller	Ball	Roller	Ball	.....	.....
Rear Axle Bearings	Roller	Roller	Ball	Roller	Roller	Ball	Roller	Roller	.....	Roller
Front Axle Bearings	Roller	Ball	Ball	Ball	Roller	Roller	Roller	Roller	.....	Roller
No. Eng. Main Bearings	Four	Three	Four	Three	Three	Three	Three	Three	Three	Four

Name of Car	Crawford	Davis	Davis	Detroiter	Dorris	Elgin	Empire	Fageol	Franklin	Franklin
No. or Name of Model	16-6-40	Six H-I-K	Six J	6-45	I-B-6	Elgin Six	60R, 70	.....	M S	Series 9
Bore and Stroke	3.500x5.250	3.250x4.500	3.500x5.250	3.250x4.500	4.000x5.000	3.000x4.250	3.250x4.500	5.000x7.000	3.625x4.000	3.250x4.000
Horsepower (S. A. E.)	29.40	25.35	29.40	25.35	38.00	21.60	25.35	60.00	31.54	25.30
Piston Displacement	303.1	224.0	303.0	223.95	377.0	480.6	224.0	824.67	247.4	199.09
Cylinders, Shape, Cast	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-I-3s	6-I-Block	6-L-Block	6-I-Sep.	6-I-Sep.	6-I-Sep.
Who Makes Motor	.....	Continental	Continental	Continental	Dorris	Falls	Continental	Hall-Scott	Franklin	Franklin
Location of Valves	Right	Right	Right	Left	Head	Left	Right	Head	Head	Head
Type Camshaft Drive	Helical	Gear	Gear	Gear	Helical	Gear	Helical	Special	Helical	Helical
Type Cooling System	Pump	Pump	Pump	Pump	Pump	Ther.-Syp.	Pump	Special	Air	Air
Lubrication System	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.	Splash	Force F.	F. F. & Spl.	F. F. & Spl.	Force F.	Force F.	Force F.
Oil Pump	.....	Plunger	Plunger	Plunger	Gear	.....	Piston	Gear	Gear	Gear
Ignition System Type	Single	Single	Single	Single	Single	Single	Single	Dual	Single	Single
Make and Control	Bosch	Delco, hand	Delco, H. & A.	Conn.	Bosch, hand	Remy	Conn., hand	Special	Else., auto.	At. Kt., auto.
Make of Carburetor	Stromberg	Stromberg	Stromberg	Ball & Ball	Stromberg	Carter	Stromberg	Zenith spec.	Franklin	Franklin
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Gravity	Vacuum	Vacuum	Gravity	Vacuum
Starting System Make	West.	Delco	Delco	Auto-Lite	West.	Wagner	Auto-Lite	.....	Dyneto	Dyneto
Lighting System Make	West.	Delco	Delco	Auto-Lite	West.	Wagner	Auto-Lite	.....	Dyneto	Dyneto
Type of Clutch	Disc	Cone	Cone	Disc	Disc	Disc	Cone	Disc	Disc	Disc
Type of Gearset	S-Unit M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Amid.	S-Unit, M	Selec.-Amid.
Speed Ratios	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Drive Through	.....	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs
Type of Rear Axle	¾ float.	¾ float.	Full float.	Full float.	Full float.	¾ float.	Full float.	½ float.	½ float.	½ float.
Direct Drive Ratio	4.58-1	4.58-1	4.43-1	4.75-1	4.08-1	4.00-1	4.417-1, 4.58-1	5.00-1	4.00-1	3.92-1
Wheelbase	120 inches	118 inches	124 inches	119 inches	128 inches	116 inches	120 inches	135, 145 in.	120 inches	115 inches
Sizes of Tires	34x4 F. & R.	34x4 F. & R.	34x4½ F. & R.	33x4 F. & R.	36x4½ F. & R.	33x4 F. & R.	34x4 F. & R.	34x4½ F. & R.	34x4½ F. & R.	32x4 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wire	Wood	Wood
Type of Rear Springs	¾ elliptic	½ elliptic	½ elliptic	½ elliptic	¾ elliptic	Cantilever	¾ elliptic	½ elliptic	Elliptic	Elliptic
Drive and Control	Left, centre	Left, centre	Left, centre	Left centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	.....	Ball	Ball	Ball	Roller	Ball	Ball	Ball	Ball	Ball
Rear Axle Bearings	.....	Roller	Roller	Roller	Roller	Ball	B. & R.	Roller	Roller	Ball
Front Axle Bearings	.....	Ball	Roller	Roller	Roller	Ball	Ball	.....	Roller	Ball
No. Eng. Main Bearings	Three	Three	Three	Three	Seven	Three	Three	Seven	Seven	Seven

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THE SIX-CYLINDER PLEASURE CAR MODELS OFFERED FOR 1917.

Data Regarding Prices, Seating Capacities and Body Types Are Given in the General Indexes on Pages 41-45.

Name of Car	Geneva	Glide	Grant	Great Eagle	Halladay	Haynes L. Six	Hollier	Howard	Hudson	Jeffery
No. or Name of Model	Speedster	6-40	K	6-60	R-3	36 and 37	186	1917	Super-Six	6
Bore and Stroke	4.000x5.500	3.125x5.000	3.000x4.250	4.250x5.250	3.125x5.000	3.500x5.000	3.000x4.250	3.500x5.250	3.500x5.000	3.500x4.625
Horsepower (S. A. E.)	38.00	23.40	21.60	43.30	23.44	29.40	21.60	29.39	29.40	29.40
Piston Displacement	.....	230.0	180.2	.....	230.2	288.6	180.3	303.1	288.6	267.0
Cylinders, Shape, Cast	6-T-3s	6-L-Block	6-I-Block	6-T-2s	6-L-Block	6-L-Block	6-T-Block	6-L-Block	6-L-Block	6-L-Block
Who Makes Motor	H.-Spill.	Rutenber	Grant	Wisconsin	Rutenber	Haynes	Falls	Continental	Hudson	Nash
Location of Valves	R. & L.	Right	Head	R. & L.	Left	Right	Head	Right	Left	Right
Type Camshaft Drive	.....	Helical	Helical	.....	Helical	Helical	.....	Helical	Helical	Chain
Type Cooling System	.....	Pump	Ther.-Syp.	Pump	Pump	Pump	Ther.-Syp.	Pump	Pump	Pump
Lubrication System	F. F. & Spl.	F. F. & Spl.	Splash	Force F.	Splash	Splash	Splash	F. F. & Spl.	Splash	F. F. & Spl.
Oil Pump	.....	Plunger	Plunger	.....	Gear	Plunger	.....	Plunger	Plunger	Gear
Ignition System Type	Single	Single	Single	Single	Single	Single	Single	Single	Single	Single
Make and Control	Else., hand	West.-hand	Remy, H. & A.	Bosch, hand	West., hand	Remy, hand	Remy	Delco, H. & A.	Delco, H. & A.	Dixie, hand
Make of Carburetor	Rayfield	Rayfield	Stromberg	Stromberg	Stromberg	Rayfield	Stewart	.....	Hudson	Rayfield
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Starting System Make	West.	West.	Wagner	West.	West.	Leece-Neville	Allis-Chalmers	Delco	Delco	Bijur
Lighting System Make	West.	West.	Wagner	West.	West.	Leece-Neville	Allis-Chalmers	Delco	Delco	Bijur
Type of Clutch	Disc	Disc	Cone	Disc	Disc	Disc	Cone	Disc	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Four	Three	Three	Three	Three	Three	Three	Three	Three	Three
Drive Through	Springs	Springs	Torque tube	Radius rods	Springs	Springs	Springs	Springs	Springs	Springs
Type of Rear Axle	Full float.	¾ float.	Full float.	Full float.	¾ float.	¾ float.	Full float.	Full float.	½ float.	½ float.
Direct Drive Ratio	.....	4.64-1	4.50-1	4.83-1	4.62-1	4.42-1	.....	4.09-1	4.45-1	4.50-1
Wheelbase	139 inches	119 inches	112 inches	145 inches	122 inches	121, 127 in.	116 inches	120 inches	125½ inches	125 inches
Sizes of Tires	34x4½ F. & R.	34x4 F. & R.	32x3½ F. & R.	37x5 F. & R.	34x4 F. & R.	34x4, 35x4½	32x3½ F. & R.	34x4 F & R.	35x4½ F. & R.	34x4 F. & R.
Wheels (Wood or Wire)	Optional	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood
Type of Rear Springs	½ elliptic	¾ elliptic	Cantilever	½ elliptic	¾ elliptic	½ elliptic	Cantilever	½ elliptic	½ elliptic	¾ elliptic
Drive and Control	Left, centre	Left centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	.....	Ball	Ball	Roller	Ball	Ball	.....	Ball	Roller	Roller
Rear Axle Bearings	Roller	Ball	B. & R.	Roller	Ball	Ball	.....	B. & R.	Roller	Roller
Front Axle Bearings	Ball	Ball	Ball	Roller	Ball	Ball	.....	Roller	Roller	Roller
No. Eng. Main Bearings	Three	Three	Six	.....	.....	Three	.....	Three	Four	Three

Name of Car	Jones	Jordan	KisselKar	KisselKar	Kline Kar	Lambert	Lenox	Lexington	Lexington	Liberty
No. or Name of Model	26-A-B-C	60	6-42	100 Point 6	6-38	80	O	6-O-17	6-P	10-A
Bore and Stroke	3.500x5.250	3.500x5.250	3.625x5.500	3.250x5.000	3.250x4.500	3.250x4.500	3.500x5.250	3.250x4.500	4.125x5.250	3.125x4.500
Horsepower (S. A. E.)	30.00	29.40	31.54	25.35	25.35	25.35	29.40	25.39	40.80	23.40
Piston Displacement	.....	303.0	340.3	248.8	224.0	224.0	303.1	224.0	421.0	207.1
Cylinders, Shape, Cast	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-3s	6-L-Block
Who Makes Motor	Lewis	Continental	Kissel	Kissel	Continental	Continental	Buda	Continental	Continental	Continental
Location of Valves	Right	Right	Right	Right	Right	Side	Side	Right	Right	Right
Type Camshaft Drive	Helical	.....	Helical	Helical	Helical	Spur	Helical	Helical	Helical	Gear
Type Cooling System	Ther.-Syp.	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Ther.-Syp.
Lubrication System	F. F. & Spl.	F. F. & Spl.	Splash	Splash	F. F. & Spl.	Splash	Splash	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.
Oil Pump	Gear	.....	Gear	Gear	Plunger	Plunger	Gear	Plunger	Plunger	Plunger
Ignition System Type	Single	Double	Single	Single	Single	Single	Single	Single	Double	Single
Make and Control	Auto-Lite, H.	Bosch	Else., hand	Remy, hand	West., hand	Remy, hand	Splitdorf, hand	Conn., hand	West., At. Kt.	Delco, hand
Make of Carburetor	Stromberg	Stromberg	Stromberg	Stromberg	Rayfield	Schebler	Zenith	Rayfield	Stromberg	Rayfield
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Starting System Make	Auto-Lite	Bijur	Kissel	Kissel	West.	Remy	Bijur	West.	West.	Delco
Lighting System Make	Auto-Lite	Bijur	West.	Remy	West.	Remy	Bijur	West.	West.	Delco
Type of Clutch	Disc	Disc	Disc	Cone	Disc	Friction	Disc	Disc	Cone	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	.....	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Three	Three	Three	Three	Three	.....	Three	Three	Three	Three
Drive Through	Springs	Springs	Springs	Springs	Springs	Chain	.....	Springs	Springs	Springs
Type of Rear Axle	Full float.	½ float.	Full float.	Full float.	Full float.	½ float.	Full float.	Full float.	Full float.	½ float.
Direct Drive Ratio	5.00-1	.....	4.25-1	4.58-1	4.50-1	3.00-1	3.50-1	4.75-1	4.08-1	4.75-1
Wheelbase	123 inches	127 inches	128 inches	117 inches	120 inches	112 in.	128 in.	116 inches	144 inches	115 inches
Sizes of Tires	34x4 F. & R.	35x4½ F. & R.	34x4 F. & R.	32x4 F. & R.	34x4 F. & R.	33x4 F. & R.	34x4½ F. & R.	32x4 F. & R.	36x4½ F. & R.	32x4 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood
Type of Rear Springs	¾ elliptic	½ elliptic	¾ elliptic	¾ elliptic	¾ elliptic	Elliptic	½ elliptic	¾ elliptic	¾ elliptic	½ elliptic
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Right, right	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Ball	.....	R. & R.	Ball	Ball	.....	.....	Ball	Ball	Ball
Rear Axle Bearings	Roller	.....	Roller	Roller	Roller	Roller	.....	B. & R.	Roller	Roller
Front Axle Bearings	Roller	.....	Roller	Roller	Ball	Ball	.....	Ball	Roller	Roller
No. Eng. Main Bearings	Three	.....	Three	Three	Three	Three	Three	Three	Three	Three

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Name of Car	Locomobile	Locomobile	Lozier	Luverne	McFarlan	Madison	Marion-Hand'y	Marion-Hand'y	Marmon	Mitchell
No. or Name of Model	M-7 "48"	R-7 "38"	82	760 and 260	X	A and B	A	6-60 B	34	D-40
Bore and Stroke	4.500x5.500	4.250x5.000	3.875x6.000	4.000x5.000	4.500x6.000	3.125x5.00c	3.125x5.000	3.500x5.250	3.750x5.125	3.250x5.000
Horsepower (S. A. E.)	48.60	43.35	36.00	38.40	48.60	23.44	23.90	29.40	33.75	25.35
Piston Displacement	525.0	425.4	424.5	377.0	572.5	230.1	230.1	300.1	339.63	248.8
Cylinders, Shape, Cast	6-T-2s	6-T-2s	6-L-2s	6-L-2s	6-T-Block	6-L-Block	6-L-Block	6-L-Block	6-I-Block	6-L-Block
Who Makes Motor	Locomobile	Locomobile	Lozier	Beaver	Teetor	Rutenber	Rutenber	Continental	Marmon	Mitchell
Location of Valves	R. & L.	R. & L.	Right	Left	R. & L.	Right	Right	Right	Head	Left
Type Camshaft Drive	Helical	Helical	Chain	Helical	Helical	Helical	Helical	Helical	Helical	Helical
Type Cooling System	Pump	Pump	Pump	Ther.-Syp.	Pump	Pump	Pump	Pump	Pump	Pump
Lubrication System	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.	Splash	F. F. & Spl.	Splash	F. F. & Spl.	F. F. & Spl.	Force F.	Splash
Oil Pump	Gear	Gear	Gear	Gear	Plunger	Plunger	Plunger	Plunger	Gear	Plunger
Ignition System Type	Dual	Dual	Single	Dual	Duplex	Dual	Single	Single	Single	Single
Make and Control	Else., hand	Else., hand	Else., hand	Bosch, hand	West., B., hand	Remy, hand	West., hand	West., hand	Bosch, hand	Conn., hand
Make of Carburetor	Loco. B. & B.	Loco., B. & B.	Rayfield	Schebler	Stromberg	Rayfield	Stromberg	Stromberg	Stromberg	Rayfield
Method of Fuel Feed	Pressure	Pressure	Pressure	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Gravity	Vacuum
Starting System Make	West.	West.	Gray & Davis	Apelco	West.	Remy	West.	West.	Bosch	Splitdorf
Lighting System Make	West.	West.	Gray & Davis	Apelco	West.	Remy	West.	West.	Bosch	Splitdorf
Type of Clutch	Disc	Disc	Disc	Disc	Disc	Disc	Disc.	Disc	Cone	Cone
Type of Gearset	Selec.-Amid.	Selec.-Amid.	S-Unit, M	S-Unit, M	Selec.-Amid.	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Four	Four	Three	Three	Three	Three	Three	Three	Three	Three
Drive Through	Radius rods	Radius rods	Springs	Radius rods	Torque arm	Springs	Springs	Springs	Torque tube	Springs
Type of Rear Axle	Full float.	Full float.	Full float.	Full float.	Full float.	Full float.	¾ float.	Full float.	¾ float.	Full float.
Direct Drive Ratio	3.85-1	3.85-1	3.93-1	3.75-1	3.53-1	4.64-1	4.42-1	4.07-1	3.69-1	4.12-1
Wheelbase	142 inches	139 inches	132 inches	130 inches	136¾ inches	115, 120 124 in.	120 inches	125 inches	136 inches	120 inches
Sizes of Tires	37x5 F. & R.	36x4½, 37x5	36x4½ F. & R.	36x4½ F. & R.	35x5 F. & R.	34x4 F. & R.	32x4 F. & R.	35x4½ F. & R.	34x4½, 35x5	32x4 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Optional	Wood	Wood	Wood	Wire	Wood
Type of Rear Springs	¾ elliptic	¾ elliptic	Platform	Elliptic	½ elliptic	¾ elliptic	½ elliptic	½ elliptic	Transverse	Cantilever
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Ball	Ball	Ball	Ball	Roller	Ball	Ball	Ball	B. & R.	B. & R.
Rear Axle Bearings	Ball	Ball	Ball	Ball	Roller	Ball	Roller	Roller	B. & R.	Roller
Front Axle Bearings	Roller	Roller	Ball	Roller	Roller	Ball	Ball	Ball	Roller	Roller
No. Eng. Main Bearings	Seven	Seven	.....	Plain	Four	Three	Three	Three	Four	Three

Name of Car	Mitchell Six	Monitor	Moon	Moon	National	Oakland	Ogren	Overland	Owen Magnetic	Owen Magnetic
No. or Name of Model	C-42	N. & O.	6-43	6-66	Highway C	34	1917	85-6	M-25	O-36
Bore and Stroke	3.500x5.000	3.250x4.500	3.250x4.500	3.500x5.250	3.500x5.250	3.812x4.750	3.750x5.500	3.250x4.500	3.500x5.250	3.750x5.500
Horsepower (S. A. E.)	29.40	23.44	25.35	29.40	29.40	18.90	33.75	25.35	29.45	33.75
Piston Displacement	288.6	230.1	224.4	303.1	303.1	177.0	364.3	224.0	303.0	364.5
Cylinders, Shape, Cast	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-I-Block	6-L-3s	6-L-Block	6-L-Block	6-L-Block
Who Makes Motor	Mitchell	Continental	Continental	Continental	National	Northway	Continental	Continental	Continental	Buda
Location of Valves	Left	Right	Right	Right	Right	Head	Side	Right	Right	Right
Type Camshaft Drive	Helical	Helical	Helical	Helical	Helical	Helical	Gear	Helical	Helical	Helical
Type Cooling System	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump
Lubrication System	Splash	Splash	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.	Splash	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.
Oil Pump	Plunger	.....	Plunger	Plunger	Gear	Plunger	.....	Gear	Plunger	Gear
Ignition System Type	Single	Single	Single	Single	Single	Dual	Single	Single	Single	Single
Make and Control	Conn., hand	Heinze, hand	Delco, hand	Delco, auto.	Split., hand	Delco, hand	Bosch	Conn., hand	Bosch, hand	Bosch, hand
Make of Carburetor	Rayfield	Stromberg	Rayfield	Rayfield	Rayfield	Marvel	Rayfield	Tillotson	Zenith	Zenith
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Starting System Make	West.	Heinze	Delco	Delco	West.	Delco	West.	Auto-Lite	Owen Magnetic	Owen Magnetic
Lighting System Make	West.	Heinze	Delco	Delco	West.	Delco	West.	Auto-Lite	Owen Magnetic	Owen Magnetic
Type of Clutch	Cone	Disc	Disc	Disc	Cone	Cone	Disc	Cone	Magnetic	Magnetic
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, X	.....	.....
Speed Ratios	Three	Three	Three	Three	Three	Three	Three	Three	.....	.....
Drive Through	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Torque rod	Springs	Springs
Type of Rear Axle	Full float.	½ float.	Full float.	½ float.	Full float.	Full float.	Full float.	¾ float.	Full float.	Full float.
Direct Drive Ratio	4.12-1	4.00-1	4.75-1	4.50-1	4.42-1	4.50-1	.....	4.60-1	4.85-1	3.50-1
Wheelbase	127 inches	115 inches	118 inches	125 inches	128 inches	112 inches	132 inches	116 inches	125 inches	136 inches
Sizes of Tires	34x4 F. & R.	33x4 F. & R.	33x4 F. & R.	35x4½ F. & R.	34x4½ F. & R.	32x4 F. & R.	34x4½ F. & R.	32x4 F. & R.	34x4½ F. & R.	35x5 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Optional
Type of Rear Springs	Cantilever	¾ elliptic	½ elliptic	½ elliptic	Cantilever	½ elliptic	½ elliptic	Cantilever	½ elliptic	½ elliptic
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left	Left
Type Gearset Bearings	R. & R.	Ball	Ball	Ball	Ball	B. & R.	.....	B. & R.	Ball	Ball
Rear Axle Bearings	Roller	Roller	Ball	Roller	Roller	Roller	.....	B. & R.	Roller	Roller
Front Axle Bearings	Roller	Ball	Ball	Roller	Roller	Ball	.....	Roller	Roller	Roller
No. Eng. Main Bearings	Three	Three	Three	Three	Three	Three	Three	Three	Three	Four

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THE SIX-CYLINDER PLEASURE CAR MODELS OFFERED FOR 1917.

Data Regarding Prices, Seating Capacities and Body Types Are Given in the General Indexes on Pages 41-45.

Name of Car	Paige	Paige	Paterson	Pierce-Arrow	Pierce-Arrow	Pierce-Arrow	Pilot	Premier	Reo	Roamer
No. or Name of Model	6-38	6-46	6-45, 6-45R	66-A-4	48-B-4	38-C-4	6-45	6B	M	Roamer
Bore and Stroke	3.125x5.000	3.500x5.250	3.250x4.500	5.000x7.000	4.500x5.500	4.000x5.500	3.125x5.000	3.375x5.500	3.562x5.125	3.125x5.250
Horsepower (S. A. E.)	23.44	29.40	26.35	60.20	48.60	38.40	23.44	27.30	30.46	23.43
Piston Displacement	230.0	303.1	224.0	824.7	524.8	414.7	230.1	295.22	306.6	230.2
Cylinders, Shape, Cast	6-L-Block	6-L-Block	6-L-Block	6-T-2s	6-T-2s	6-T-2s	6-L-Block	6-I-Block	6-L-3s	6-L-Block
Who Makes Motor	Rutenber	Continental	Continental	Pierce-Arrow	Pierce-Arrow	Pierce-Arrow	Teetor	Premier	Reo	Rutenber
Location of Valves	Right	Right	Right	R. & L.	R. & L.	R. & L.	Right	Head	R. & H.	Right
Type Camshaft Drive	Helical	Helical	Helical	Spur	Helical	Helical	Helical	Helical	Helical	Helical
Type Cooling System	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump
Lubrication System	F. F. & Spl.	F. F. & Spl.	F. F. & Spl.	Force F.	Force F.	Force F.	F. F. & Spl.	F. F. & Spl.	Splash	F. F. & Spl.
Oil Pump	Plunger	Plunger	Plunger	Gear	Gear	Gear	Plunger	Gear	Plunger	Gear
Ignition System Type	Single	Single	Dual	Double	Double	Double	Single	Single	Single	Single
Make and Control	Remy, hand	Remy, hand	Delco, hand	Bosch, hand	Bosch, hand	Bosch, hand	Delco, H. & A.	Delco, auto.	Remy, hand	Bosch, hand
Make of Carburetor	Rayfield	Rayfield	Stromberg	Pierce-Arrow	Pierce-Arrow	Pierce-Arrow	.....	Johnson	Rayfield	Stromberg
Method of Fuel Feed	Gravity	Vacuum	Vacuum	Pressure	Pressure	Pressure	Vacuum	Vacuum	Vacuum	Vacuum
Starting System Make	Gray & Davis	Gray & Davis	Delco	West.	West.	West.	Delco	Delco	Remy	Bijur
Lighting System Make	Gray & Davis	Gray & Davis	Delco	West.	West.	West.	Delco	Delco	Remy	Bijur
Type of Clutch	Disc	Disc	Cone	Cone	Cone	Cone	Disc	Disc	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	Selec.-Amid.	Selec-Amid.	Select.-Amid.	S-Unit, M	S-Unit, M	Selec.-Amid.	S-Unit, M
Speed Ratios	Three	Three	Three	Four	Four	Four	Three	Three	Three	Three
Drive Through	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs
Type of Rear Axle	¾ float.	¾ float.	Full float.	½ float.	½ float.	½ float.	Float.	½ float.	Full float.	¾ float.
Direct Drive Ratio	4.41-1	4.36-1	4.50-1	Optional	Optional	Optional	.....	4.54-1	4.307-1	4.60-1
Wheelbase	117 inches	127 inches	117 inches	147½ inches	142 inches	134 inches	119 inches	125½ inches	126 inches	126 inches
Sizes of Tires	32x4 F. & R.	35x4½ F. & R.	32x4 F. & R.	38x5½ F. & R.	37x5 F. & R.	36x4½ F. & R.	32x4 F & R.	35x4½ F. & R.	34x4½ F. & R.	34x4 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wire
Type of Rear Springs	Cantilever	Cantilever	¾ elliptic	¾ elliptic	¾ elliptic	¾ elliptic	Cantilever	½ elliptic	Cantilever	¾ elliptic
Drive and Control	Left	Left, centre	Left, centre	Right	Right	Right	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	B. & R.	B. & R.	Ball	Ball	Ball	B. & R.	Ball	Ball	Roller	Ball
Rear Axle Bearings	B. & R.	Roller	Roller	B. & R.	B. & R.	B. & R.	Roller	Roller	Roller	Ball
Front Axle Bearings	Ball	Ball	Ball	Roller	Roller	Roller	Roller	Roller	Roller	Ball
No. Eng. Main Bearings	Three	Three	Three	Seven	Seven	Seven	Three	Three	Three	.....

Name of Car	Saxon	Simplex	Singer	S. S. E.	Stephens Six	Studebaker	Sun 'Light Six'	Templar	Velie-Biltwell	Velie-Biltwell
No. or Name of Model	S 4	5	17	1	60 and 65	6-50	17	645	28	27
Bore and Stroke	2.875x4.500	4.375x6.250	4.000x5.500	3.552x5.000	3.250x4.500	3.875x5.000	3.125x5.000	3.000x5.000	3.250x4.500	3.500x5.250
Horsepower (S. A. E.)	19.84	45.94	38.40	29.39	25.40	36.04	23.40	21.60	25.35	29.40
Piston Displacement	175.3	563.7	414.7	300.0	224.0	353.8	230.0	212.0	224.0	303.1
Cylinders, Shape, Cast	6-L-Block	6-L-3s	6-T-2s	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block	6-L-Block
Who Makes Motor	Continental	Simplex	H.-Spill.	S. S. E.	Continental	Studebaker	Sun	Templar	Continental	Continental
Location of Valves	Right	Left	R. & L.	Head	Right	Left	Right	Head	Right	Right
Type Camshaft Drive	Helical	Chain	Helical	.....	.....	Helical	Helical	Chain	Helical	Helical
Type Cooling System	Ther.-Syp.	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump
Lubrication System	Splash	Force F.	Force F.	Force F.	Force F.	Splash	F. F. & Spl.	Force F.	F. F. & Spl.	F. F. & Spl.
Oil Pump	Plunger	Gear	Gear	.....	Gear	Gear	Plunger	Gear	Plunger	Plunger
Ignition System Type	Single	Dual	Single	Single	Single	Single	Single	Single	Dual	Dual
Make and Control	Remy, hand	Eise., hand	Bosch, hand	.....	Conn., auto.	Remy, hand	Remy, hand	Remy, hand	Remy, auto.	At. Kt., auto.
Make of Carburetor	Ray. or Strom.	Newcomb	Rayfield	Zenith	Zenith	Schebler	Rayfield	Zenith	Stromberg	Stromberg
Method of Fuel Feed	Gravity	Pressure	Vacuum	Pressure	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Starting System Make	Wagner	Bosch	West.	Delco, U. S. L.	Auto-Lite	Stud.-Wagner	Remy	Remy	Remy	Remy
Lighting System Make	Wagner	Bosch	West.	Delco	Auto-Lite	Stud.-Wagner	Remy	Remy	Remy	Remy
Type of Clutch	Disc	Disc	Disc	Disc	Disc	Cone	Disc	Disc	Disc	Disc
Type of Gearset	S-Unit, X	Selec.-Amid.	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, X	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Three	Four	Four	Three	Three	Three	Three	Three	Three	Four
Drive Through	Torque rod	Springs	Springs	Springs	Springs	Radius rods	Springs	Springs	Springs	Springs
Type of Rear Axle	¾ float.	Full float.	Full float.	Full float.	Full float.	Full float.	Full float.	½ float	½ float.	½ float.
Direct Drive Ratio	4.75-1	2.92-1	3.61-1	3.40-1	.....	3.70-1	4.75-1	4.43-1	4.33-1	4.08-1
Wheelbase	112 inches	143.5 inches	136 inches	121, 130 in.	115 inches	122 inches	116 inches	120 inches	115 inches	124 inches
Sizes of Tires	32x3½ F. & R.	36x4½, 37x5	35x5 F. & R.	33x4 F. & R.	32x4 F. & R.	35x4½ F. & R.	34x4, F. & R.	32x4 F. & R.	32x4 F. & R.	35x4½ F. & R.
Wheels (Wood or Wire)	Wood	Wood	Optional	Optional	Wood	Wood	Wood	Optional	Optional	Optional
Type of Rear Springs	Cantilever	½ elliptic	Cantilever	Cantilever	½ elliptic	¾ elliptic	½ elliptic	½ elliptic	¾ elliptic	¾ elliptic
Drive and Control	Left, centre	Left centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	Plain	Ball	Ball	Ball	Ball	Roller	Ball	Ball	Ball	Ball
Rear Axle Bearings	Roller	Ball	Roller	Ball	.....	Roller	B. & R.	Roller	Roller	Roller
Front Axle Bearings	Roller	Roller	Roller	Ball	.....	Roller	B. & R.	Roller	Roller	Roller
No. Eng. Main Bearings	Three	Three	Three	Seven	.....	Four	Three	Three	Three	Three

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SPECIFICATIONS OF 1917's EIGHT-CYLINDER PLEASURE CARS.

Data Regarding Prices, Seating Capacities and Body Types Are Given in the General Indexes on Pages 41-45.

Name of Car	Westcott	Willys-Six	Winton	Winton	Apperson	Briscoe	Cadillac	Chevrolet	Cole 8	Cunningham
No. or Name of Model	17	88-6	48	33	8-17	8-38	55	D2, D5	860-1-2-3-5	V
Bore and Stroke	3.500x5.250	3.500x5.250	4.500x5.500	3.750x5.250	3.250x5.000	3.000x3.500	3.125x5.125	3.375x4.000	3.500x4.250	3.750x5.000
Horsepower (S. A. E.)	29.40	29.40	48.60	33.75	33.80	28.80	31.25	36.45	39.20	45.00
Piston Displacement	303.0	303.0	524.8	347.9	330.6	197.9	314.4	.....	346.3	441.8
Cylinders, Shape, Cast	6-L-Block	6-L-Block	6-L-2s	6-L-2s	8-V-4s	8-I-Block	8-V-Block	8-I-4s	8-L-4s	8-L-4s
Who Makes Motor	Continental	Continental	Winton	Winton	Apperson	Ferro	Cadillac	Chevrolet	Northway	Cunningham
Location of Valves	Right	Right	Right	Right	Inside	Head	Inside	Head	Inside	Left
Type Camshaft Drive	Helical	Helical	Chain	Chain	Helical	Helical	Chain	Helical	Helical	Helical
Type Cooling System	Pump	Pump	Pump	Pump	Ther.-Syp.	Ther.-Syp.	Pumps	Pump	Pump	Pump
Lubrication System	F. F. & Spl.	F. F. & Spl.	Force F.	Force F.	Force F.	F. F. & Spl.	Force F.	Splash	Force F.	Force F.
Oil Pump	Plunger	Plunger	Plunger	Plunger	Gear	Gear	Gear	Plunger	Gear	Gear
Ignition System Type	.....	Single	Duplex	Duplex	Dual	Single	Single	Single	Single	Single
Make and Control	Delco, H. & A.	Conn., hand	Bosch, hand	Bosch, hand	Remy, hand	Remy, hand	Delco, H. & A.	Remy	Delco, H. & A.	West.
Make of Carburetor	Rayfield	Tillotson	Rayfield	Rayfield	Rayfield	Zenith	Cadillac	.....	Stromberg	Stromberg
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Gravity	Pressure	Vacuum	Vacuum	Vacuum
Starting System Make	Delco	Auto-Lite	Bijur	Bijur	Bijur	Apelco	Delco	Auto-Lite	Delco	West.
Lighting System Make	Delco	Auto-Lite	Bijur	Bijur	Bijur	Apelco	Delco	Auto-Lite	Delco	West.
Type of Clutch	Disc	Cone	Disc	Disc	Disc	Cone	Disc	Cone	Cone	Disc
Type of Gearset	S-Unit, M	S-Unit, X	S-Unit, M	S-Unit, M	Selec.-Amid.	Selec.-Amid.	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Three	Three	Four	Four	Three	Three	Three	Three	Three	Three
Drive Through	Springs	Torque rod	Springs	Springs	Springs	Springs	Springs	Torque rod	Springs	Springs
Type of Rear Axle	¾ float.	Full float.	Full float.	Full float.	½ float.	Full float.	Full float.	¾ float.	Full float.	Full float.
Direct Drive Ratio	4.45-1	4.00-1	4.08-1	4.45-1	4.25-1	4.41-1	4.50-1	4.25-1	4.46-1	4.09-1
Wheelbase	125 inches	125 inches	138 inches	128 inches	128 inches	114 inches	135, 132 in.	120 inches	127 inches	132 inches
Sizes of Tires	35x4½ F. & R.	35x4½ F. & R.	37x5 F. & R.	36x4½ F. & R.	35x4½ F. & R.	32x3½ F. & R.	36x4½, 37x5	34x4 F. & R.	35x4½ F. & R.	37x5 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Optional	Optional	Wood	Wood	Wood	Wood	Wood	Optional
Type of Rear Springs	Cantilever	Cantilever	¾ elliptic	¾ elliptic	¾ elliptic	Cantilever	Platform	Cantilever	½ elliptic	¾ elliptic
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Opt., centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	B. & R.	Ball	B. & R.	B. & R.	Roller	.....	Ball	Ball	B. & R.	B. & R.
Rear Axle Bearings	Roller	B. & R.	Roller	Roller	Roller	B. & R.	Roller	Roller	Roller	Ball
Front Axle Bearings	Roller	Roller	Roller	Roller	Roller	Ball	Roller	Ball	Roller	Ball
No. Eng. Main Bearings	Three	Three	Four	Four	Three	Three	Three	Three	Three	Three

Name of Car	Daniels	Drummond	Ghent	Hollier	H.-Laughlin	S Jackson	King	Majestic	Majestic	Murray
No. or Name of Model	A	17	Eight 40	178	D	349, 350	EE	A	M	70 T
Bore and Stroke	3.250x5.000	3.000x5.000	2.625x4.000	3.000x4.250	2.250x3.750	3.000x3.500	3.000x5.000	3.250x5.000	3.000x5.000	3.250x5.000
Horsepower (S. A. E.)	33.80	28.50	22.05	28.80	16.20	28.80	28.80	33.80	28.80	33.80
Piston Displacement	331.8	284.0	173.2	240.3	119.28	198.0	282.6	331.8	282.7	331.8
Cylinders, Shape, Cast	8-L-4s	8-L-Block	8-V-Block	8-V-Block	8-L-Block	8-V-Block	8-V-4s	8-V-4s	8-V-4s	8-V-Block
Who Makes Motor	H.-Spill.	H.-Spill.	Ahle	Hollier	H.-Laughlin	Ferro	King	Colonial	Colonial	H.-Spill.
Location of Valves	Inside	Right	Head	Inside	Right	Head	Inside	Heads	Heads	Inside
Type Camshaft Drive	Helical	.....	Gear	.....	Chain	Helical	Chain	Helical	Chain	Gear
Type Cooling System	Pump	Pump	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Gear	Ther.-Syp.	Pump
Lubrication System	Force F.	Force F.	F. F. & Spl.	Splash	Splash	Force F.	Force F.	Force F.	Force F.	F. F. & Spl.
Oil Pump	Gear	Gear	.....	.....	.....	Gear	Gear	Gear	Gear	.....
Ignition System Type	Single	Single	Single	Single	Single	Single	Single	Single	Single	Single
Make and Control	West., hand	West.	G. & D., hand	At. Kent	At. Kt., auto.	Remy, hand	At. Kt., H. & A.	At. Kent, hand	At Kent, hand	Dixie
Make of Carburetor	Zenith	Zenith	Carter	Stewart	Ensign	Zenith	Ball & Ball	.....	.....	Zenith
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Starting System Make	West.	West.	Gray & Davis	Apelco	Allis Chalmers	Auto-Lite	Ward-Leonard	Auto Lite	Auto Lite	West.
Lighting System Make	West.	West.	Gray & Davis	Apelco	Allis Chalmers	Auto-Lite	Ward-Leonard	Auto Lite	Auto Lite	West.
Type of Clutch	Disc	Disc	Disc	Cone	Disc	Disc	Disc	Disc	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	Gearless	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit M	S-Unit, M
Speed Ratios	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Drive Through	Springs	Torque arm	Springs	Springs	Front wheels	Springs	Springs	Springs	Springs	Springs
Type of Rear Axle	¾ float.	Full float.	¾ float.	Full float.	Full float.	¾ float.	Full float.	Full float.	¾ float.	Full float.
Direct Drive Ratio	4.52-1	4.41-1	4.25-1	.....	4.50-1	4.75-1	4.64-1	.....	.....	.....
Wheelbase	127 inches	120 inches	120 inches	116 inches	112 inches	118, 112 in.	120 inches	135 in.	125 in.	128 inches
Sizes of Tires	34x4½ F. & R.	34x4 F. & R.	33x4 F. & R.	34x4 F. & R.	30x3½ F. & R.	34x4, 32x3½	34x4 F. & R.	35x5 F. & R.	32x4 F. & R.	34x4½ F. & R.
Wheels (Wood or Wire)	Wood	Wood	Steel	Wood	Wire	Optional	Wood	Wire	Wood	Wood
Type of Rear Springs	½ elliptic	Cantilever	½ elliptic	Cantilever	Cantilever	Elliptic	Cantilever	½ elliptic	½ elliptic	¾ elliptic
Drive and Control	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre	Left, centre
Type Gearset Bearings	B. & R.	Ball	Ball	.....	Ball	Roller	Roller	B. & R.	B. & R.	.....
Rear Axle Bearings	Roller	Roller	Ball	.....	Ball	Roller	Ball	Ball	Roller	.....
Front Axle Bearings	Roller	Roller	Ball	.....	Ball	Ball	Ball	Ball	Ball	.....
No. Eng. Main Bearings	Three	Three	Three	.....	.....	Three	Three	Three	Three	.....

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SPECIFICATIONS OF 1917's EIGHT-CYLINDER PLEASURE CARS.

Data Regarding Prices, Seating Capacities and Body Types Are Given in the General Indexes on Pages 41-45.

Name of Car	Oakland	Oldsmobile	Peerless	Puritan	Regal	Ross	Scripps-Booth
No. or Name of Model	50	45	56	.....	F	C	D
Bore and Stroke	3.500x4.500	2.875x4.750	3.250x5.000	3.250x4.000	3.000x4.500	3.250x5.000	2.625x3.375
Horsepower (S. A. E.)	39.20	26.40	33.80	33.80	28.80	33.80	22.05
Piston Displacement	346.5	246.7	331.8	265.5	254.4	331.8	162.2
Cylinders, Shape, Cast	8-V-4s	8-L-4s	8-L-4s	8-V-Block	8-L-Block	8-V-Block	8-1-2s
Who Makes Motor	Northway	Oldsmobile	Peerless	.....	Regal	H.-Spill.	Ferro
Location of Valves	Inside	Inside	Inside	Head	Sides	Inside	Head
Type Camshaft Drive	Helical	Helical	Spur	Gear	Helical	Gear	Helical
Type Cooling System	Pump	Pump	Pump	Ther.-Syp.	Ther.-Syp.	Pump	Ther.-Syp.
Lubrication System	F. F. & Spl.	Force F.	Force F.	Force F.	Force F.	Force F.	Force F.
Oil Pump	Gear	Gear	Gear	.....	Gear	Gear	Gear
Ignition System Type	Dual	Single	Dual	Single	Single	Single	Single
Make and Control	Delco, H. & A.	Delco, H. & A.	At, Kt., H. & A.	.....	Heinze, hand	At. Kt., H. & A.	Remy
Make of Carburetor	Stromberg	Johnson	Ball & Ball	Special	Johnson	Zenith	Zenith
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	.....	Vacuum	Vacuum	Vacuum
Starting System Make	Delco	Delco	Gray & Davis	.....	Dyneto	Ward-Leonard	Wagner
Lighting System Make	Delco	Delco	Gray & Davis	.....	Dyneto	Ward-Leonard	Wagner
Type of Clutch	Cone	Cone	Disc	Disc	Cone	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, X	S-Unit, M	S-Unit, M
Speed Ratios	Three	Three	Three	Three	Three	Three	Three
Drive Through	Springs	Springs	Springs	.....	Radius rod	Springs	Springs
Type of Rear Axle	Full float.	Full float.	½ float.	Full float.	¾ float.	Full float.	¾ float.
Direct Drive Ratio	4.08-1	4.91-1	4.42-1	.....	4.00-1	.....	4.80-1
Wheelbase	127 inches	120 inches	125 inches	122 inches	115 in.	130 inches	120 inches
Sizes of Tires	34x4½ F. & R.	33x4, 34x4	35x4½ F. & R.	34x4 F. & R.	33x4 F. & R.	35x4½ F. & R.	32x4 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wire	Wood	Wood	Wire
Type of Rear Springs	¾ elliptic	¾ elliptic	Platform	Cantilever	Cantilever	½ elliptic	Cantilever
Type Gearset Bearings	Ball	B. & R.	B. & R.	Ball	Roller	Ball	Ball
Front Axle Bearings	Roller	Roller	Roller	Ball	Roller	Ball	B. & R.
Rear Axle Bearings	Ball	Roller	Roller	Ball	Ball	Ball	Ball
No. Eng. Main Bearing	Three	Two	Three	Three	Two	Three	Two

THE 1917 TWELVE-CYLINDER GASOLINE MODELS.

Name of Car	Standard 8	Stearns-Knight	Willys-Knight	Yale Eight	Austin	Enger
No. or Name of Model	F	33	88-8	K	Highway King	Twin Unit 12
Bore and Stroke	3.250x5.000	3.250x5.000	3.375x4.000	3.125x4.500	2.875x5.000	2.687x3.500
Horsepower (S. A. E.)	33.80	33.80	45.00	31.25	39.60	34.20
Piston Displacement	531.8	331.8	.....	276.0	389.6	227.3
Cylinders, Shape, Cast	8-V-4s	8-V-Block	8-I-Block	8-V-4s	12-V-3s	12-V-6s
Who Makes Motor	H.-Spill	Stearns	Willys-Knight	Massnick	Weidely	Enger
Location of Valves	Inside	Sleeve	Sleeve	Inside	Heads	Heads
Type Camshaft Drive	Helical	Gear	Chain	Helical	Helical	Chain
Type Cooling System	Pump	Ther.-Syp.	Ther.-Syp.	Ther.-Syp.	Pump	Ther.-Syp.
Lubrication System	Force F.	F. F. & Spl.	Force F.	F. F. & Spl.	Force F.	F. F. & Spl.
Oil Pump	Gear	Gear	Plunger	.....	.....	Gear
Ignition System Type	Single	Single	Single	Single	Single	Single
Make and Control	Splitdorf, hand	Remy, hand	.....	Remy, hand	Delco, hand	Remy, hand
Make of Carburetor	Zenith	Rayfield	Zenith	Zenith	Stromberg	Stromberg
Method of Fuel Feed	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Gravity
Starting System Make	Apelco	West.	Auto Lite	Disco	Delco	West.
Lighting System Make	Apelco	West.	Auto Lite	Disco	Delco	West.
Type of Clutch	Disc	Disc	Cone	Disc	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, X	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Three	Three	Three	Three	6, 2 Reverse	Three
Drive Through	Springs	Springs	Torque tube	Springs	Springs	Springs
Type of Rear Axle	½ float.	½ float.	Full float.	½ float.	Full float.	Full float.
Direct Drive Ratio	4.45-1	4.75-1	.....	4.41-1	5.25-1	4.75-1
Wheelbase	127 inches	121 inches	125 in.	126 inches	142 inches	116 inches
Sizes of Tires	35x4½ F. & R.	35x4½ F. & R.	34x4½ F. & R.	34x4 F. & R.	34x4½ F. & R.	32x4 F. & R.
Wheels (Wood or Wire)	Wood	Wood	Wood	Wood	Wood	Wood
Type of Rear Springs	½ elliptic	Cantilever	Cantilever	¾ elliptic	Double canti.	Cantilever
Type Gearset Bearings	B. & R.	B. & R.	B. & R.	Ball	Ball	Ball
Rear Axle Bearings	Roller	B. & R.	Roller	Roller	Roller	B. & R.
No. Eng. Main Bearings	Three	Three	Two	Two	Four	Three

Name of Car	H. A. L. 12	Haynes L 12	National	Packard	Pathfinder
No. or Name of Model	21-A	40-41	Highway 12	2-25, 2-35	La Salle
Bore and Stroke	2.875x5.000	2.750x5.000	2.875x4.750	3.000x5.000	2.875x5.000
Horsepower (S. A. E.)	39.60	36.30	39.70	43.20	39.68
Piston Displacement	389.0	356.3	370.0	424.1	389.6
Cylinders, Shape, Cast	12-V-3s	12-V-6s	12-V-6s	12-V-6s	12-V-3s
Who Makes Motor	Weidely	Haynes	National	Packard	Pathfinder
Location of Valves	Heads	Heads	Outside	Inside	Heads
Type Camshaft Drive	Helical	Chain	Helical	Chain	Spur
Type Cooling System	Pump	Pump	Pump	Pump	Pump
Lubrication System	Force F.	Force F.	Force F.	Force F.	Force F.
Oil Pump	Plunger	Gear	Gear	Gear	Plunger
Ignition System Type	Single	Single	Single	Single	Single
Make and Control	Remy, hand	Delco, H. & A.	Delco, hand	D.-Bijur, H.&A.	Delco, hand
Make of Carburetor	Stromberg	Rayfield	Rayfield	Packard	Stromberg
Method of Fuel Feed	Gravity	Vacuum	Vacuum	Pressure	Vacuum
Starting System Make	West.	Leece-Neville	Bijur	Bijur	Delco
Lighting System Make	West.	Leece-Neville	Bijur	Bijur	Delco
Type of Clutch	Disc	Disc	Cone	Disc	Disc
Type of Gearset	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M	S-Unit, M
Speed Ratios	Three	Three	Three	Three	Three
Drive Through	Springs	Springs	Springs	Springs	Springs
Type of Rear Axle	Full float.	¾ float.	Full float.	½ float.	Full float.
Direct Drive Ratio	4.46-1	4.42-1	4.58-1	4.36-1	4.30-1
Wheelbase	135 inches	121, 127 in.	128 inches	126, 135 in.	130 inches
Sizes of Tires	34x4½ F. & R.	34x4½ F. & R.	34x4½ F. & R.	35x5 F. & R.	35x5 F. & R.
Wheels (Wood or Wire)	Optional	Wire	Wood	Wood	Wire
Type of Rear Springs	½ elliptic	½ elliptic	Cantilever	Platform	¾ elliptic
Type Gearset Bearings	Ball	Ball	Ball	Ball	Roller
Rear Axle Bearings	Roller	Ball	Roller	Ball	Roller
No. Eng. Main Bearings	Three	Three	Three	Three	Three

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Car Models, Body Styles and Prices for 1917

American Gasoline Pleasure Cars, Alphabetically Arranged According to Manufacturers' Names, with Index to Specifications

A

Abbott Corp., Cleveland, O.

ABBOTT-DETROIT — CHASSIS, Pg. 34

Model	Body	Cyl.	Pas.	Price
6-44	Touring	6	7	$1195
6-44	Roadster	6	4	1250
6-44	Motor Coach	6	4	1495
6-44	Sedan	6	5	1795

Aland Motor Car Co., Detroit, Mich.

ALAND — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
....	Touring	4	5	$1500
....	Roadster	4	2	1500

Allen Motor Co., Fostoria, O.

ALLEN — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
37	Touring	4	5	$795
37	Roadster	4	2	795
Classic	Touring	4	5	850
Classic	Tourabout roadster	4	4	850
Classic	Roadster	4	2	850

Alter Motor Car Co., Grand Haven, Mich.

ALTERCAR — CHASSIS, Pg. 30-34

Model	Body	Cyl.	Pas.	Price
E-17	Touring	4	5	$675
F-17	Touring	6	5	850

American Motors Corp., Plainfield, N. J.

AMERICAN SIX — CHASSIS, Pg. 34

Model	Body	Cyl.	Pas.	Price
A	Touring	6	5	$1285

Anderson Motor Co., Rock Hill, S. C.

ANDERSON 6-40 — CHASSIS, Pg. 34

Model	Body	Cyl.	Pas.	Price
200-A	Touring	6	6	$1250
200-B	Roadster	6	4	1275
200-C	Touring	6	5	1250

Apperson Bros. Auto Co., Kokomo, Ind.

APPERSON — CHASSIS, Pg. 34-39

Model	Body	Cyl.	Pas.	Price
6-17-7	Touring	6	7	$1750
6-17-5	Touring	6	5	1690
6-17-4	Roadster	6	4	1750
8-17-7	Touring	8	7	2000
8-17-4	Roadster	8	4	2000

Arbenz Motor Car Co., Chillicothe, O.

ARBENZ — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
25	Touring	4	5	$675

Auburn Automobile Co., Auburn, Ind.

AUBURN — CHASSIS, Pg. 30-34

Model	Body	Cyl.	Pas.	Price
4-36U	Touring	4	5	$895
4-36M	Roadster	4	2	895
6-39	Touring	6	5	1185
6-39	Convertible Sedan	6	5	1260
6-39C	Chummy Roadster	6	4	1185
6-39C	Chummy Coupe	6	4	1260
6-39M	Roadster	6	2	1085
6-44	Touring	6	7	1535
6-44	Convertible Sedan	6	7	1785

Austin Automobile Co., 114-118 Division Ave., Grand Rapids, Mich.

AUSTIN HIGH. KING — CHASSIS, Pg. 34-40

Model	Body	Cyl.	Pas.	Price
36-66	Touring	6	5-6	$3400
36-66	Roadster	6	2-4	3400
48-66	Touring	6	5-6	4200
48-66	Roadster	6	2-4	4200
1917	Touring	12	5-6	3750
1917	Touring	12	7	3750
1917	Roadster	12	2-4	3750
1917	Coupe	12	5	4550
1917	Sedan	12	7	4950
1917	Limousine	12	7	5250

B

Baker R. & L. Co., Cleveland, O.

OWEN-MAGNETIC — CHASSIS, Pg. 37

Model	Body	Cyl.	Pas.	Price
O-36-5	Touring	6	4	$3750
O-36-4	Touring	6	7	3750
O-36-6	Roadster	6	4	3750
O-36-3-7	Limousine	6	5	4800
O-36-3-7	Landaulet	6	5	5000
M-25-1	Coupe	6	3	3500
M-25-3	Limousine	6	7	4200
M-25-4	Touring	6	5	3150
M-25-7	Landaulet	6	7	4400

Barley Motor Car Co., Streator, Ill.

HALLADAY & ROAM. — CHASSIS, Pg. 36-38

Model	Body	Cyl.	Pas.	Price
Halladay	Touring	6	5	$1385
Halladay	Touring roadster	6	5	1150
Halladay	Sedan	6	4	2450
Halladay	Town Car	6	4	2950
Halladay	Special Boat	6	4	1850
Roamer	Touring	6	5	1850
Roamer	Sedan	6	4	2250
Roamer	Town Car	6	4	2850

The Bartholomew Co., Peoria, Ill.

GLIDE — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
6-40	Touring	6	5	$1125
6-40	Convertible Sedan	6	..	1325
6-40	Roadster	6	4	1150

Bateman Mfg. Co., Grenloch, N. J.

FRONTMOBILE — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
....	Roadster	4	2	$1000
....	Touring	4	5	1000

Bell Motor Car Co., York, Penn.

BELL — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
17	Touring	4	5	$875

Ben-Hur Motor Co., Willoughby, O.

BEN-HUR — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
17-T	Touring	6	7	$1875
17-S	Sedan	6	7	2750
17-R	Roadster	6	4	1875

Biddle Motor Car Co., Philadelphia, Penn.

BIDDLE — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
D	Touring	4	4	$2275
D	Touring	4	5	2350
D	Roadster	4	2	2200
D	Brougham	4	5	3800
D	Semi-Col. Town Car	4	5	3850
D	Fully Col. Town Car	4	5	3900

Bour-Davis Motor Car Co., Detroit, Mich.

BOUR-DAVIS — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
17	Touring	6	5	$1250

Brewster & Co., Long Island City, N. Y.

BREWSTER — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
Standard	Town Brougham	4	..	$7600
Standard	Conv. Brougham	4	..	7500
Standard	Glass-Quarter B	4	..	7500
Standard	Town Landaulet	4	..	7600
Standard	Fall. Front Land.	4	..	7700
Standard	Touring Landaulet	4	..	7900
Standard	Limousine	4	..	7700
Standard	Enc. Drive Lim.	4	..	7500
Standard	Open Phaeton	4	..	7000
Standard	Club Runabout	4	..	6500
Standard	Runabout	4	..	6700
Standard	Land. Runabout	4	..	7500

Briscoe Motor Corp., Jackson, Mich.

BRISCOE — CHASSIS, Pg. 30-39

Model	Body	Cyl.	Pas.	Price
Eight-28	Touring	8	5	$985
Eight-?8	Roadster	8	..	985
Four-B24	Touring	4	5	685
Four-B24	Roadster	4	4	685
Four-B24	Runabout	4	2	685

The Brunswick Motor Car Company, Newark, N. J.

BRUNSWICK — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
36	Touring	4	5	$1950
37	Runabout	4	2	1950
40	Convert. Springfield	4	5	2250
42	Sport	4	4	1950

Buckeye Mfg. Co., Anderson, Ind.

LAMBERT — CHASSIS, Pg. 32-36

Model	Body	Cyl.	Pas.	Price
80	Touring	4	5	$985
90	Touring	4	5	850

Buick Motor Co., Flint, Mich.

BUICK — CHASSIS, Pg. 30-35

Model	Body	Cyl.	Pas.	Price
D-34	Roadster	4	2	$660
D-35	Touring	4	5	675
D-45	Touring	6	5	1070
D-44	Roadster	6	2	1040
D-47	Sedan	6	7	1835
D-46	Coupe	6	3	1440

C

Cadillac Motor Car Co., Detroit, Mich.

CADILLAC — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
55	Touring	8	7	$2080
55	Phaeton	8	4	2080
55	Roadster	8	2	2080
55	Club Roadster	8	4	2080
55	Convertible Victoria	8	4	2550
55	Convertible Touring	8	7	2675
55	Coupe	8	4	2800
55	Brougham	8	5	2950
55	Limousine	8	7	3600
55	Imperial	8	7	3750
55	Landaulet		7	3750

Cameron Car Co., Norwalk, Conn.

CAMERON — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
1917	Touring	6	5	$1250
1917	Roadster	6	2	1250

Carter Mfg. Co., Detroit, Mich.

BROWNIE — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
49	Touring	4	5	$625

J. I. Case T. M. Co., Racine, Wis.

CASE — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
T	Touring	4	7	$1190
T	Roadster	4	4	1190

Chalmers Motor Co., Detroit, Mich.

CHALMERS — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
6-30	Touring	6	5	$1090
6-30	Touring	6	7	1750
6-30	Sedan	6	6	1850
6-30	Town Car	6	7	2550
6-30	Limousine	6	7	2550
6-30	Roadster	6	2	1070
6-30	Cabriolet	6	3	1440

Chandler Motor Car Co., Cleveland, O.

CHANDLER — CHASSIS, Pg. 25

Model	Body	Cyl.	Pas.	Price
17	Touring	6	7	$1395
17	Roadster	6	4	1395
17	Limousine	6	7	2695
17	Coupe	6	4	1995
17	Convertible sedan	6	7	1995

Chevrolet Motor Co., Flint, Mich.

CHEVROLET — CHASSIS, Pg. 30-39

Model	Body	Cyl.	Pas.	Price
490	Roadster	4	2	$490
490	Touring	4	5	490
F-2	Roadster	4	2	800
F-5	Touring	4	5	800
D-2	Roadster	8	2	1100
D-5	Touring	8	5	1100

Classic Motor Co., Chicago, Ill.

CLASSIC — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
100	Touring	4	5	$885
80	Shamrock roadster	4	4	885

Cole Motor Car Co., Indianapolis, Ind.

COLE EIGHT — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
860	Touring	8	7	$1695
861	Roadster	8	3	1695
865	Tourberline	8	7	....
863	Tourcoupe	8	4	2295
862	Toursedan	8	7	2295

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Colonial Automobile Co., Indianapolis, Ind.

COLONIAL — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
35	Roadster	6	4	$995
35	Touring	6	5	995

Columbia Motors Co., Detroit, Mich.

COLUMBIA — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
Six	Touring	6	5	....

Commonwealth Motors Co., Chicago, Ill.

PARTIN-PALMER — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
20	Runabout	4	2	$495
32	Touring	4	5	695

Cortland Cart & Carriage Company, Sidney, N. Y.

HATFIELD — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
A	Touring	4	5	$950
H	Roadster	4	2	875
I	Suburban	4	5	800

Crow Motor Car Co., Elkhart, Ind.

CROW-ELKHART — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
35	Touring	4	5	$795
35	Convertible sedan	4	..	940
33	Cloverleaf	4	2	825

Crowther Motors Corp., Rochester, N. Y.

CROWTHER-DURYEA — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
..	Touring	4	5	$650
..	Runabout	4	2	450

J. Cunningham Son & Co., Rochester, N. Y.

CUNNINGHAM — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
V	Limousine	8	7	$5000
V	Touring	8	7	3750
V	Runabout	8	2	3750

D

Daniels Motor Car Co., Reading, Penn.

DANIELS — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
A	Touring	8	7	$2800
A	Landaulet	8	7	4200
A	Limousine	8	7	4200
A	Roadster	8	2-3-4	2650
A	Sedan	8	5	4200
A	Cloverleaf	8	4	2700
A	Close coupled	8	4	2800

G. W. Davis Motor Car Co., Richmond, Ind.

DAVIS — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
6-H	Touring	6	7	$1195
6-I	Roadster	6	5	1195
6-K	Sedan	6	7	1795
6-J	Touring	6	7	1495

Detroiter Motor Car Co., Detroit, Mich.

DETROITER — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
Six-45	Touring	6	5	$1195
Six-45	Roadster	6	3	1195

Disbrow Motor Co., Detroit, Mich.

DISBROW — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
....	Speedster	4	2	$2650

Dispatch Motor Car Co., Minneapolis, Minn.

DISPATCH — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
D	Roadster	4	2	$1135
G	Touring	4	7	1210
H	Coupe	4	3	1400

Dixie Motor Car Co., Louisville, Ky.

DIXIE FLYER — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
M	Touring	4	5	$840
M	Roadster	4	4	840
M	Sedan	4	5	1275

Dodge Bros., Detroit, Mich.

DODGE BROS. — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
..	Touring	4	5	$785
..	Winter touring	4	5	950
..	Roadster	4	2	785
..	Winter roadster	4	2	950
..	Convertible sedan	4	5	1135

Dorris Motor Car Co., St. Louis, Mo.

DORRIS — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
IB6	Touring	6	7	$2475
IB6	Limousine	6	7	3675
IB6	Sedan	6	5	3350
IB6	Coupe	6	4	3250

Dort Motor Car Co., Flint, Mich.

DORT — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
6	Cloverleaf	4	3	$695
6	Touring	4	5	695
6-S	Sedan	4	5	1065
6	Sedanet	4	5	815

Drexel Motor Car Corp., Chicago, Ill.

DREXEL — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
..	Roadster	4	2	$855
..	Touring	4	5	855

Drummond Motor Co., Omaha, Neb.

DRUMMOND — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
17	Touring	8	5	$1600
17	Cloverleaf	8	4	1600
17	Roadster	8	3	1600

Dunn Motor Works, Ogdensburg, N. Y.

DUNN — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
..	Runabout	4	2	$295

E

Eagle Macomber Motor Car Co., Sandusky, O.

EAGLE ROTARY — CHASSIS, Pg. ..

Model	Body	Cyl.	Pas.	Price
A	Roadster	5	2	$700
A	Cloverleaf	5	3	700

Eastern Motors, Inc., New Britain, Conn.

CHARTER OAK — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
A	Touring	6	4	....
A	Touring	6	6	....
A	Roadster	6	3	....

Elgin Motor Car Corp., Chicago, Ill.

ELGIN — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
..	Touring	6	6	$985
..	Roadster	6	4	985

Elkhart Car. & Motor Car Co, Elkhart, Ind.

ELCAR — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
D	Touring	4	5	$845
E	Roadster	4	4	845
F	Roadster	4	2	845

The Emerson Motors Co., Inc., New York, N. Y.

EMERSON — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
Four	Touring	4	5	$395

Empire Auto Co., Indianapolis, Ind.

EMPIRE — CHASSIS, Pg. 31-35

Model	Body	Cyl.	Pas.	Price
45	Touring	4	5	$960
60R	Roadster	6	4	1145
70	Touring	6	7	....
70	Touring	6	5	....

Enger Motor Car Co., Cincinnati, O.

ENGER — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
Twin-6	Touring	12	5	$1295

The Erie Motor Car Co., Painesville, O.

ERIE — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
33	Touring	4	5	$795
34	Roadster	4	2	795

F

Fageol Motors Co., Oakland, Cal.

FAGEOL — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
....	Chassis only	6	..	$9500

F. I. A. T., Poughkeepsie, N. Y.

FIAT — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
55-E17	Touring	4	7	$5500
55-E17	Limousine	4	7	6500

Ford Motor Co., Detroit, Mich.

FORD — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
T	Touring	4	5	$360
T	Runabout	4	2	345
T	Coupelet	4	2	505
T	Sedan	4	5	645
T	Town Car	4	6	595

H. H. Franklin Mfg. Co., Syracuse, N. Y.

FRANKLIN — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
Series 9	Touring	6	5	$1850
Series 9	Runabout	6	2	1800
Series 9	Runabout	6	4	1850
Series 9	Brougham	6	4	2700
Series 9	Sedan	6	5	2750
Series 9	Limousine	6	7	3000
Series 9	Town Car	6	7	3000
Series 9	Cabriolet	6	3	2650
M-8	Touring	6	5	1950
M-8	Roadster	6	3	1900
M-8	Berline	6	7	3100
M-8	Coupe	6	3	2600
M-8	Sedan	6	5	2350
M-8	Brougham	6	5	2800

G

Ghent Motor Co., Chicago, Ill.

GHENT — CHASSIS, Pg. 31-39

Model	Body	Cyl.	Pas.	Price
4-30	Touring	4	5	$750
4-30	Roadster	4	3	750
8-40	Touring	8	5	1050
8-40	Roadster	8	3	1050

Grant Motor Car Corp., Cleveland, O.

GRANT — CHASSIS, Pg. 25

Model	Body	Cyl.	Pas.	Price
K	Touring	6	5	$825
K	Roadster	6	3	825
K	Cabriolet	6	3	1050
K	Sedan	6	5	1000
K	Coupe	6	3	960

H

Hackett Motor Car Co., Jackson, Mich.

HACKETT — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
Four	Touring	4	5	$888
Four	Roadster	4	2	888

Harroun Motors Corp., Detroit, Mich.

HARROUN — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
..	Touring	4	5	$595

Harvard-Pioneer Motor Car Co., Troy, N. Y.

HARVARD — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
4-20	Roadster	4	2	$750

Hassler Motor Co., Indianapolis, Ind.

HASSLER — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
....	Roadster	4	2	$1650

Haynes Automobile Co., Kokomo, Ind.

HAYNES — CHASSIS, Pg. 36-40

Model	Body	Cyl.	Pas.	Price
36	Touring	6	5	$1485
36	Sedan	6	5	2150
37	Touring	6	7	1535
37R	Roadster	6	4	1585
37	Sedan	6	7	2250
40	Touring	12	5	1985
40	Sedan	12	5	2650
41	Touring	12	7	2085
41	Sedan	12	7	2750
41R	Roadster	12	4	2085

Heseltine Corp., New York, N. Y.

HESELTINE — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
..	Roadster	4	2	$695
..	Touring	4	4	695

Homer-Laughlin Engineering Co., Los Angeles, Cal.

HOMER-LAUGHLIN — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
D	Roadster	8	2	$1050

The A. Howard Co., Galion, O.

HOWARD — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
1917	Touring	6	5	....
1917	Close Coupled	6	4	....
1917	Convertible Sedan	6	5	....

Hudson Motor Car Co., Detroit, Mich.

HUDSON — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
Super-Six	Phaeton	6	7	$1650
Super-Six	Roadster	6	2	1650
Super-Six	Cabriolet	6	3	1950
Super-Six	Touring Sedan	6	7	2175
Super-Six	Town Car	6	7	2925
Super-Six	Town Car Land	6	7	3025
Super-Six	Limousine	6	7	2925
Super-Six	Limousine Land	6	7	3025

Hupp Motor Car Corp., Detroit, Mich.

HUPMOBILE — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
NU	Touring	4	7	$1340
N	Touring	4	5	1185
N	Year Round Touring	4	5	1385
NR	Roadster	4	2	1185
NR	Year Round Coupe	4	2	1370
NQ	Sedan	4	5	1735

I

Inter-State Motor Co., Muncie, Ind.

INTER-STATE — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
T	Touring	4	5	$850
TR	Roadster	4	2	850
TSS	Sedan	4	5	1250
TR4	Roadster	4	4	895
TD	Touring	4	5	895

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J

Jackson Auto Co., Jackson, Mich.

JACKSON — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
Wolverine 349	Roadster	8	2	$1295
Wolverine 349	Chum. Road.	8	4	1295
Wolverine 349	Touring	8	5	1295
350	Touring	8	5	1195

Jones Motor Car Co., Wichita, Kan.

JONES — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
26B	Touring	6	7	$1475
26C	Sedan	6	7	2350
26A	Roadster	6	4	1475

Jordan Motor Car Co., Cleveland, O.

JORDAN — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
60	Touring	6	7	$1650
60	Sport Car	6	4	1750
60	Roadster	6	3	1650

K

Kent Motors Corporation, New York, N. Y.

KENT — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
Four	Club Roadster	4	4	$985
Four	Touring	4	5	985

King Motor Car Co., Detroit, Mich.

KING — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
EE	Touring	8	7	....
EE	Sedan	8	7	....
EE	Roadster	8	3	....
EE	Foursome	8	4	....

Kissel Motor Car Co., Hartford, Wis.

KISSELKAR — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
100 Point 6	Touring	6	5	$1195
100 Point 6	All Year Touring	6	7	1285
100 Point 6	Sedan	6	7	1635
100 Point 6	Roadster	6	3	1195
100 Point 6	Roadster	6	4	1285
100 Point 6	Coupe	6	4	1635
100 Point 6	Town Car	6	5	1950
6-42	All Year Touring	6	7	1750
6-42	Sedan	6	7	2100
6-42	Roadster	6	4	1650
6-42	Coupe	6	4	2000

Kline Kar Corp., Richmond, Va.

KLINEKAR — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
6-38	Touring	6	5	$1195
6-38	Roadster	6	2	1175
6-38	Shamrock Roadster	6	4	1195
6-38	Roadster	6	3	1175

L

Laurel Motor Car Co., Richmond, Ind.

LAUREL — CHASSIS, Pg. 22

Model	Body	Cyl.	Pas.	Price
35	Cloverleaf	4	4	$895
35	Touring	4	5	850
35	Touring	4	7	885

Lenox Motor Car Co., Boston, Mass.

LENOX — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
O	Touring	6	5	$2000

Lewis Spring & Axle Co., Chelsea, Mich.

HOLLIER — CHASSIS, Pg. 36-39

Model	Body	Cyl.	Pas.	Price
186	Touring	6	5	$895
186	Roadster	6	2	895
178	Touring	8	5	1185
178	Roadster	8	4	1185

The Lexington-Howard Co., Connersville, Ind.

LEXINGTON — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
6-O-17	Touring	6	5	$1185
6-O-17	Clubster	6	4	1185
6-OO-17	Convertible Sedan	6	5	1350
6-OO-17	Convertible Coupe	6	4	1350
6-P	Touring	6	7	2875

Liberty Motor Car Co., Detroit, Mich.

LIBERTY — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
10-A	Roadster	6	4	$1095
10-A	Touring	6	5	1095
10-A	Brougham	6	..	2350

Locomobile Company of America, Bridgeport, Conn.

LOCOMOBILE — CHASSIS, Pg. 37

Model	Body	Cyl.	Pas.	Price
M-7-48	Touring	6	6	$5400
M-7-48	Touring	6	7	5400
M-7-48	Limousine	6	7	6500
M-7-48	Landaulet	6	7	6600
M-7-48	Berline	6	7	6800
R-7-38	Touring	6	6	4600
R-7-38	Touring	6	7	4600
R-7-38	Touring	6	4	4750
R-7-38	Limousine	6	7	5600
R-7-38	Landaulet	6	7	5700
R-7-38	Berline	6	7	5900

Lozier Motor Co., Detroit, Mich.

LOZIER — CHASSIS, Pg. 22-37

Model	Body	Cyl.	Pas.	Price
84	Touring	4	7	$1695
84	Limousine	4	7	3250
84	Cabriolet	4	3	2250
84	Roadster	4	2	1695
82	Touring	6	7	2775
82	Limousine	6	7	4450

H. A. Lozier Co., Cleveland, O.

HAL — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
21 A	Touring	12	7	$2285
21 A	Roadster	12	3	2385
21 A	Shamrock Roadster	12	4	2385
21 A	Springfield	12	7	3250
21 A	Brougham	12	7	4250
21 A	Limousine	12	7	4250

Luverne Automobile Co., Luverne, Minn.

LUVERNE — CHASSIS, Pg. 37

Model	Body	Cyl.	Pas.	Price
760	Touring	6	7	$2500
260	Roadster	6	2	2250

M

McFarlan Motor Co., Connersville, Ind.

McFARLAN — CHASSIS, Pg. 37

Model	Body	Cyl.	Pas.	Price
122	Touring Roadster	6	3	$3400
124	Submarine	6	4	3550
125-P	Pasadena	6	5	3200
126	Touring	6	6	3200
127	Touring	6	7	3200
127	Victoria	6	7	3800
131	Town Car	6	7	4300
133	Coupe	6	4	4300
134	Knickerbocker Cab'let	6	7	5000
135	Sedan	6	5	4450
136	Touring Sedan	6	7	4300
136	Speeding Sedan	6	7	4300
137	Philadelphia Berline	6	7	4600
138	Limousine	6	7	4350
138-D	Town Car-Limousine	6	7	4400
141	Continental Landaulet	6	7	4600
91	Country Club Coach	6	10	5000

Macon Automobile Co., Macon, Ga.

MACON — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
A	Touring	4	5	....
A	Roadster	4	2	....

The Madison Motors Co., Anderson, Ind.

MADISON — CHASSIS, Pg. 37

Model	Body	Cyl.	Pas.	Price
Standard	Touring	6	5	$1050
Standard	Touring	6	7	1150
Dolly Madison	Roadster	6	4	1150
De Luxe	Touring	6	5	1150
De Luxe	Touring	6	7	1250

Maibohm Motors Co., Racine, Wis

MAIBOHM — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
A	Roadster	4	3	$695

Majestic Motor Co., New York, N. Y.

MAJESTIC — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
A	Touring	8	5	$1650
A	Touring	8	7	1650
A	Roadster	8	4	1650
M	Touring Sedan	8	..	3500

Maxwell Motor Co., Detroit, Mich.

MAXWELL — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
25	Touring	4	5	$595
25	Roadster	4	2	530
25	Cabriolet	4	2	865
25	Town Car	4	6	915

Mercer Automobile Co., Trenton, N. J.

MERCER — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
22-73	Touring	4	6	$3500
22-73	Raceabout	4	2	3250
22-73	Sporting	4	4	3500
22-73	Touring Limousine	4	7	5000
22-73	Runabout	4	2	3400

Metz Co., Waltham, Mass.

METZ — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
25	Touring	4	5	$545
25	Roadster	4	2	545

Mitchell Motors Co., Inc., Racine, Wis.

MITCHELL — CHASSIS, Pg. 27

Model	Body	Cyl.	Pas.	Price
C-42	Touring	6	5	$1425
C-42	Touring	6	7	1460
C-42	Roadster	6	2	1425
C-42	Club Roadster	6	5	1495
D-40	Roadster	6	2	1150
D-40	Touring	6	5	1150

Moline Automobile Co., East Moline, Ill.

MOLINE-KNIGHT — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
G	Touring	4	7	$1750
G	Roadster	4	4	1750
G	Touring Sedan	4	7	2350
G	Coupe	4	4	2400
C	Touring	4	5	1450
C	Roadster	4	4	1450

Monitor Motor Car Co., Columbus, O.

MONITOR — CHASSIS, Pg. 32-37

Model	Body	Cyl.	Pas.	Price
M-4	Touring	4	5	$840
M-4	Roadster	4	3-4	840
N	Touring	6	5	1085
O	Roadster	6	4	1085
O	Roadster	6	3	1085

Monroe Motor Co., Pontiac, Mich.

MONROE — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
M-3	Roadster	4	2	$565
M-3	Cloverleaf	4	3	635
M-3	Sedan	4	4	965
M-4	Touring	4	5	985
M-5	Cloverleaf	4	4	985

Moon Motor Car Co., St. Louis, Mo.

MOON — CHASSIS, Pg. 37

Model	Body	Cyl.	Pas.	Price
6-43	Touring	6	5	$1295
6-43	Cabriolet	6	3	1850
6-43	Roadster	6	3	1295
6-66	Sedan	6	7	2250
6-66	Coupe	6	4	2150
6-66	Touring	6	7	1650
6-66	Roadster	6	4	1650
6-66	Cabriolet	6	4	2150

Moore Motor Co., Minneapolis, Minn.

MOORE 30 — CHASSIS, Pg. 32

Model	Body	Cyl.	Pas.	Price
H. G. M.	Touring	4	5	$550

Murray Motor Car Co., Pittsburg, Penn.

MURRAY — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
70 T	Touring	8	7	$2450
70 T	Roadster	8	2	2450

Mutual Motors Co., Jackson, Mich.

MARION-HANDLEY — CHASSIS, Pg. 37

Model	Body	Cyl.	Pas.	Price
6-40-A	Touring	6	7	$1275
6-40-A	Roadster	6	4	1275
6-60-B	Touring	6	7	1575

The Napoleon Auto Mfg. Co., Napoleon, O.

NAPOLEON — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
30	Touring	4	5	$795

Nash Motors Co., Kenosha, Wis.

JEFFERY — CHASSIS, Pg. 32-36

Model	Body	Cyl.	Pas.	Price
4	Touring	4	7	$1095
4	Sedan	4	7	1260
4	Touring Sedan	4	7	1320
6	Touring	6	7	1465
6	Roadster	6	2	1435
6	Sedan	6	7	1620
6	Touring Sedan	6	7	1690

National Motor Car & Vehicle Corporation, Indianapolis, Ind.

NATIONAL — CHASSIS, Pg. 37-40

Model	Body	Cyl.	Pas.	Price
Highway 6	Roadster	6	4	$1750
Highway 6	Touring	6	7	1750
Highway 6	Coupe	6	4	2400
Highway 6	Touring Sedan	6	5	2350
Highway 12	Roadster	12	4	2150
Highway 12	Touring	12	7	2150
Highway 12	Coupe	12	4	2800
Highway 12	Touring Sedan	12	5	2750

E. A. Nelson, Detroit, Mich.

NELSON — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
..	Sedan	4	..	$2200

Nordyke & Marmon Co., Indianapolis, Ind.

MARMON — CHASSIS, Pg. 37

Model	Body	Cyl.	Pas.	Price
34	Touring	6	7	....
34	Touring	6	5	....

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34	Roadster	6	4	....
34	Roadster	6	3	....

Oakland Motor Car Co., Pontiac, Mich.

OAKLAND — CHASSIS, Pg. 37-40

Model	Body	Cyl.	Pas.	Price
34	Touring	6	5	$875
34	Roadster	6	2	875
34	Convertible coupe	6	..	995
34	Convertible Sedan	6	..	1020
50	Touring	8	7	1585

O'Connor Corporation, Chicago, Ill.

O'CONNOR — CHASSIS, Pg. ..

Model	Body	Cyl.	Pas.	Price
D	Touring	4	5	$785
E	Roadster	4	3	785
F	Touring	4	5	845
G	Roadster	4	3	845
B	Touring	6	5	995
C	Roadster	6	3	995

Ogren Motor Works, Chicago, Ill.

OGREN — CHASSIS, Pg. 37

Model	Body	Cyl.	Pas.	Price
1917	Touring	6	5	....
1917	Roadster	6	2	....

Olds Motor Works, Lansing, Mich.

OLDSMOBILE — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
45	Touring	8	7	$1367
45	Touring	8	5	1295
45	Sedan	8	5	1850
45	Cabriolet	8	4	1775
45	Standard Roadster	8	4	1295
45	Club Roadster	8	4	1295

Olympian Motors Co., Pontiac, Mich.

OLYMPIAN — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
..	Touring	4	5	$795
..	Touring	4	4	850
..	Roadster	4	2	795

Packard Motor Car Co., Detroit, Mich.

PACKARD — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
2-35	Touring	12	7	$3500
2-25	Salon Touring	12	7	3500
2-35	Phaeton	12	5	3500
2-35	Salon Phaeton	12	5	3500
2-35	Imperial Limousine	12	7	5150
2-35	Limousine, cab sides	12	7	5000
2-35	Lim. w'out cab sides	12	7	4950
2-35	Land. with cab sides	12	7	5050
2-35	Lim. w'out cab sides	12	6	4900
2-35	Land. w'out c. sides	12	6	4950
2-35	Brougham	12	4	4950
2-35	Chassis only	12	..	3000
2-25	Touring	12	7	3050
2-25	Phaeton	12	5	3050
2-25	Salon phaeton	12	5	3050
2-25	Runabout	12	2	3050
2-25	Limousine	12	6	4450
2-25	Landaulet	12	6	4500
2-25	Brougham	12	4	4500
2-25	Coupe	12	?	4150
2-25	Chassis only	12	..	2650
2-35	Landaulet	12	7	5000
2-25	Runabout	12	4	3050

Packet Motor Car Mfg. Co., Minneapolis, Minn.

PACKET — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
..	Roadster	4	2	$325

Paige-Detroit Motor Car Co., Detroit, Mich.

PAIGE — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
6-39	Touring	6	5	$1175
6-51	Touring	6	7	1495
6-51	Roadster	6	4	....
6-51	Coupe	6	3	2100
6-51	Sedan	6	7	2300
6-51	Town car	6	7	2750
6-51	Limousine	.	7	2750

Pan-American Motors Corp., Chicago, Ill.

CHICAGO — CHASSIS, Pg. 35

Model	Body	Cyl.	Pas.	Price
6-40	Touring	6	5	$1250

W. A. Paterson Co., Flint, Mich.

PATERSON — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
6-45	Touring	6	5	$1095
6-45	Touring	6	7	1120
6-45R	Roadster	6	4	1095

Pathfinder Co., Indianapolis, Ind.

PATHFINDER — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
La Salle	Touring	12	7	$2750
La Salle	Cloverleaf	12	4	2900

Peerless Motor Car Co., Cleveland, O.

PEERLESS — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
56	Touring	8	7	$1890
56	Roadster	8	3	1890
56	Roadster	8	4	1890
56	Limousine	8	7	3060
56	Sedan	8	5	2750
56	Coupe	8	4	2700

Pennsy Motors Co. of Pittsburg, Penn.

PENNSY — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
R	Touring	4	5	$855
S	Roadster	4	4	855

Phianna Motors Co., Newark, N. J.

PHIANNA — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
M	Chassis only	4	..	$3600

P

Pierce-Arrow Motor Car Corp., Buffalo, N. Y.

PIERCE-ARROW — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
38-C-4	Runabout	6	2	$4600
38-C-4	Runabout	6	3	4600
38-C-4	Coupe	6	2	5630
38-C-4	Coupe	6	3	5630
38-C-4	Touring	6	4	4600
38-C-4	Touring	6	5	4600
38-C-4	Brougham	6	..	5870
38-C-4	Landaulet	6	..	5870
38-C-4	Sedan	6	..	5870
38-C-4	Vestibule Brougham	6	..	6050
38-C-4	Brougham-Landaulet	6	..	5870
38-C-4	Vestibule Landaulet	6	..	6050
38-C-4	Vest. Broug.-Land.	6	..	6050
38-C-4	French Brougham	6	..	5870
38-C-4	French Broug.-Land.	6	..	5870
38-C-4	Town Brougham	6	..	5870
38-C-4	Town Broug.-Land.	6	..	5870
38-C-4	Roadster	6	4	4600
38-C-4	Convertible Roadster	6	..	5630
48-B-4	Runabout	6	2	4900
48-B-4	Runabout	6	3	4900
48-B-4	Coupe	6	2	6060
48-B-4	Coupe	6	3	6060
48-B-4	Touring	6	4	4900
48-B-4	Touring	6	5	4900
48-B-4	Touring	6	7	5000
48-B-4	Brougham	6	..	6180
48-B-4	Suburban	6	..	6420
48-B-4	Landau	6	..	6420
48-B-4	Suburban Landau	6	..	6420
48-B-4	Vestibule Suburban	6	..	6660
48-B-4	Vestibule Landau	6	..	6660
48-B-4	Vestibule Brougham	6	..	6360
48-B-4	Vest. Suburban Land.	6	..	6660
48-B-4	Roadster	6	4	5000
48-B-4	Convertible Roadster	6	..	5000
66-A-4	Runabout	6	4	5900
66-A-4	Runabout	6	3	5900
66-A-4	Coupe	6	2	7060
66-A-4	Coupe	6	3	7060
66-A-4	Touring	6	4	5900
66-A-4	Touring	6	5	5900
66-A-4	Touring	6	7	6000
66-A-4	Brougham	6	..	7180
66-A-4	Suburban	6	..	7420
66-A-4	Suburban Landau	6	..	7420
66-A-4	Vestibule Suburban	6	..	7660
66-A-4	Vestibule Landau	6	..	7660
66-A-4	Vestibule Brougham	6	..	7360
66-A-4	Vest. Suburban-Land.	6	..	7660
66-A-4	Roadster	6	4	6000
66-A-4	Convertible Roadster	6	..	7060

Pilgrim Motor Car Co., Detroit, Mich.

PILGRIM — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
..	Touring	4	5	$735

Pilliod Motor Co., Toledo, O.

PILLIOD — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
F	Touring	4	5	$1485
F	Cloverleaf	4	4	1485
F	Roadster	4	2	1485

Pilot Motor Car Co., Richmond, Ind.

PILOT — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
6-45	Get Chummy Road	6	4	$1150
6-45	Double Cowl Touring	6	5	1150

F. R. Porter Co., Port Jefferson, N. Y.

F. R. P. — CHASSIS, Pg. 31

Model	Body	Cyl.	Pas.	Price
45-A	Raceabout	4	2	$5000
45-B	Tour. (chassis only)	4	7	7000

Premier Motor Corp., Indianapolis, Ind.

PREMIER — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
6B	Touring	6	7	$1895
6B	Roadster	6	4	1895
6B	Limousine	6	7	3150
6B	Town Car	6	7	3150
6B	Touring Sedan	6	7	2900

Princess Motor Car Corp., Detroit, Mich.

PRINCESS — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
4-36-F	Touring Car	4	5	$775
4-36-F	Roadster	4	3	775
4-36-F	Speedster	4	2	775

Pullman Motor Car Co., York, Penn.

PULLMAN — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
424	Touring	4	5	$825
424	Roadster	4	4	825
424	Roadster	4	2	825

Puritan Motors Co., Boston, Mass.

PURITAN — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
..	Brougham	8	4	....

R

Regal Motor Car Co., Detroit, Mich.

REGAL — CHASSIS, Pg. 33-40

Model	Body	Cyl.	Pas.	Price
J	Touring	4	5	$695
Eight	Roadster	8	2	$1200
Eight	Touring	8	7	1200
Eight	Con. Sedan	8	7	1200

Reo Motor Car Co., Lansing, Mich.

REO — CHASSIS, Pg. 33-28

Model	Body	Cyl.	Pas.	Price
R	Touring	4	5	$875
M	Touring	6	7	1250
S	Roadster	4	3	875
N	Roadster	6	4	1250

Ri-Chard Auto Mfg. Co., Cleveland, O.

RI-CHARD — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
1917	Touring	4	9	$7500
1917	Roadster	4	2	7000

Ross & Young Machine Co., Detroit, Mich.

ROSS — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
C	Touring	8	5	$1350

S

Saginaw Motor Car Co., Saginaw, Mich.

YALE 8 — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
K	Touring	8	7	$1350

Saxon Motor Car Corp., Detroit, Mich.

SAXON — CHASSIS, Pg. 33-38

Model	Body	Cyl.	Pas.	Price
B-5-R	Roadster	4	2	$495
S-4-T	Touring	6	5	815
S-2-R	Roadster	6	3	815

The Schoeneck Co., Chicago, Ill.

GENEVA — CHASSIS, Pg. 36

Model	Body	Cyl.	Pas.	Price
Speedster	Touring	6	6	$2500
Speedster	Roadster	6	2	2500

Scripps-Booth Corp., Detroit, Mich.

SCRIPPS-BOOTH — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
D	Roadster	8	2	$1175

Seneca Motor Car Co., Fostoria, O.

SENECA — CHASSIS, Pg. 33

Model	Body	Cyl.	Pas.	Price
4-27-A	Touring	4	5	$695
4-27-B	Roadster (cloverleaf)	4	4	695
4-27-C	Roadster (cloverleaf)	4	3	695

Simplex Auto Co., Inc., New Brunswick, N. J.

SIMPLEX — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
5	Chassis only	6	..	$6000

Singer Motor Co., Inc., New York City.

SINGER — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
17	Touring	6	7	$3800
17	Touring	6	4	3800
17	Runabout	6	2	3800
17	Limousine	6	7	4750
17	Landaulet	6	..	4850

S. S. E. Co., Philadelphia, Penn.

S. S. E. — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
A-1	Touring	6	5	$6700
A-1	Touring	6	7	7000
A-1	Roadster	6	2	6700
A-1	Runabout	6	2	6700
A-1	Limousine	6	..	8000
A-1	Berline	6	..	8000

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A-1	Coupe	6	..	7500
A-1	Sedan	6	..	7500
A-1	Town Car	6	..	6700

Standard Steel Car Co., Pittsburg, Penn.

STANDARD — CHASSIS, Pg. 40

Model	Body	Cyl.	Pas.	Price
E	Roadster	8	4	$1850
F	Touring	8	7	1900
F	Limousine	8	7	3500
F	Convertible Sedan	8	7	2500

States Motor Car Mfg. Co., Kalamazoo, Mich.

STATES — CHASSIS, Pg. 34

Model	Body	Cyl.	Pas.	Price
B	Touring	4	5	$845
B	Roadster	4	..	845
B	Sedan	4	..	845

F. B. Stearns Co., Cleveland, O.

STEARNS-KNIGHT — CHASSIS, Pg. 34-40

Model	Body	Cyl.	Pas.	Price
32	Touring	4	5	$1450
32	Roadster	4	4	1450
32	Runabout	4	3	1450
32	Limousine	4	7	2900
32	Coupe	4	4	2050
32	Limousine-Brougham	4	7	3000
32	Landaulet	4	7	3000
32	Landaulet Brougham	4	7	3100
32	Touring Sedan	4	..	2050
33	Touring	8	7	2150
33	Roadster	8	4	2150
33	Runabout	8	4	2150
33	Limousine	8	7	3500
33	Limousine Brougham	8	7	3500
33	Coupe Landaulet	8	7	2900
33	Coupe	8	4	2900
32	Landaulet	8	7	3600
33	Landaulet Brougham	8	7	3600

Stephens Motor Branch Moline Plow Co., Moline, Ill.

STEPHENS SIX — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
60	Roadster	6	3	$1150
65	Touring	6	5	1150

Sterling Auto Mfg. Co., Amston, Conn.

AMS-STERLING — CHASSIS, Pg. 30

Model	Body	Cyl.	Pas.	Price
..	Touring	4	5	....
..	Roadster	4	2	....

Studebaker Corp., Detroit, Mich.

STUDEBAKER — CHASSIS, Pg. 34-38

Model	Body	Cyl.	Pas.	Price
4-40	Touring	4	7	$940
4-40	Roadster	4	2	930
4-40	Landau Roadster	4	3	1150
6-50	Touring	6	7	1180
6-50	Roadster	6	2	1170
6-50	Limousine	6	7	2600
6-50	Coupe	6	4	1750
6-50	Landau Roadster	6	3	1350
6-50	Sedan	6	7	1700

Stutz Motor Car Co., Indianapolis, Ind.

STUTZ — CHASSIS, Pg. 34

Model	Body	Cyl.	Pas.	Price
Bulldog Special	Roadster	4	4	$2550
Bulldog Special	Touring	4	6	2550
Roadster	Roadster	4	..	2275

Sun Motor Car Co., Inc., Elkhart, Ind.

SUN LIGHT SIX — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
17	Touring	6	5	$1095
17	Touring	6	7	1145
17	Roadster	6	4	1145
17	Sedan	6	5	1295

T

The Templar Motors Corp., Cleveland, O.

TEMPLAR — CHASSIS, Pg. 34-38

Model	Body	Cyl.	Pas.	Price
445	Roadster	4	2	$1225
445	Roadster	4	4	1250
445	Touring	4	5	1250
445	Sedan	4	5	1850
645	Roadster	6	2	1225
645	Roadster	6	4	1250
645	Touring	6	5	1250
645	Sedan	6	5	1850

Trumbull Motor Car Co., Philadelphia, Penn.

TRUMBULL — CHASSIS, Pg. 34

Model	Body	Cyl.	Pas.	Price
16-B	Roadster	4	2	$395
16-B	Runabout	4	2	395
16-B	Coupe	4	2	600

U

U. S. Carriage Co., Columbus, O.

GREAT EAGLE — CHASSIS, Pg. 31-36

Model	Body	Cyl.	Pas.	Price
4-50	Special	4	..	....
6-50	Special	6	..	....

V

Velie Motors Corp., Moline, Ill.

VELIE — CHASSIS, Pg. 38

Model	Body	Cyl.	Pas.	Price
28	Touring	6	5	$1135
28	Roadster	6	4	1135
28	Roadster	6	2	1115
28	Coupe	6	4	1750
28	Cabriolet	6	3	1485
28	Touring Sedan	6	5	1685
28	Town Car	6	5	2200
27	Touring	6	7	1600

W

Wayne Works, Richmond, Ind.

WAYNE-RICHMOND — CHASSIS, Pg. 34

Model	Body	Cyl.	Pas.	Price
4-35	Touring	4	5	$750

The Westcott Motor Car Co., Springfield, O.

WESTCOTT — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
Series 17	Touring	6	7	$1690
Series 17	Touring	6	5	1590
Series 17	Cloverleaf	6	4	1590
Series 17	Touring Sedan	6	7	2190
Series 17	Touring Sedan	6	5	2090

The White Co., Cleveland, O.

WHITE — CHASSIS, Pg. 34

Model	Body	Cyl.	Pas.	Price
16-Valve 4	Touring	4	7	$4600
16-Valve 4	Limousine	4	7	....
16-Valve 4	Landaulet	4	7	....
16-Valve 4	Coupe	4	3	....
16-Valve 4	Sedan	4	4	....
16-Valve 4	Runabout	4	4	....

Willys-Overland Co., Toledo, O.

OVERLAND — CHASSIS, Pg. 33-37

Model	Body	Cyl.	Pas.	Price
Country Club	Roadster	4	4	$695
85-4	Touring	4	5	795
85-4	Touring Sedan	4	5	1195
85-4	Touring Coupe	4	3	1045
85-6	Touring	6	5	925
85-6	Tour. Sedan	6	5	1325
85-6	Tour. Coupe	6	3	1175

WILLYS-KNIGHT — CHASSIS, Pg. 34-40

88-4	Touring	4	7	1285
88-4	Tour. Sedan	4	7	1950
88-4	Limousine	4	7	1950
88-8	.....	8	..	....

WILLYS-SIX — CHASSIS, Pg. 39

88-6	Touring	6	7	1325

The Winton Co., Cleveland, O.

WINTON — CHASSIS, Pg. 39

Model	Body	Cyl.	Pas.	Price
48	Touring	6	7	$3500
48	Touring	6	4	3500
48	Roadster	6	2	3500
48	Roadster	6	3	3500
48	¾ Limousine	6	7	4500
48	Coupe	6	3	4500
48	Sedan	6	6	4750
48	Full 4 Door Lim.	6	7	4750
48	Limousine landaulet	6	7	4750
48	Touring	6	6	3500
48	Touring	6	5	3500
33	Touring	6	7	2735
33	Touring	6	6	2835
33	Touring	6	5	2685
33	Touring	6	4	2685
33	Roadster	6	2	2685
33	Roadster	6	3	2685
33	¾ Limousine	6	7	3650
33	Coupe	6	3	3600
33	Sedan	6	6	3900
33	Full 4 Door Lim.	6	7	3900
33	Limousine Landaulet	6	7	3900

Woods Motor Vehicle Co., 25th Street, Chicago, Ill.

WOODS DUAL POWER — CHASSIS, Pg. 34

Model	Body	Cyl.	Pas.	Price
44	Coupe	4	4	$2650

Electric Pleasure Car Models

A

Anderson Electric Car Co., Detroit, Mich.

Model	Type	Pas.	Price
63	Brougham	4	$2275
63	Cabriolet	3	2175
63	Brougham	5	*2350
63	Touring	4	1775
63	Roadster	5	2375
63	Runabout	5	2325
62	Cabriolet	3	2175
62	Brougham	4	2275
62	Brougham	5	2350
62	Touring	4	1775
62	Roadster	5	2375
62	Runabout	5	2325
64	Brougham	5	2350
64	Brougham	4	2275
64	Cabriolet	3	2175
64	Touring	4	1775
64	Roadster	5	2375
64	Runabout	5	2325
68	Touring	4	1775
68	Brougham	4	2275
68	Brougham	5	2350
68	Cabriolet	3	2175
68	Roadster	5	2375
68	Runabout	5	2325

*Price includes battery.

B

Baker R. & L. Co., Cleveland, O.

Model	Type	Pas.	Price
..	Brougham BX7	4	$2800
..	Coach J7	5	3000

Beardsley Electric Co., Los Angeles, Cal.

Model	Type	Pas.	Price
100	Brougham	5	$2650
100	Brougham	4	2000
100	Brougham	4	1285
100	Roadster	3	2250
200	Roadster	3	2250
200	Brougham	5	2650
200	Brougham	4	2000
200	Brougham	4	1285
400	Brougham	4	2000
400	Brougham	5	2650
400	Roadster	3	2250
400	Brougham	4	1285
500	Brougham	4	1285
500	Brougham	5	2650
500	Brougham	4	2000
500	Roadster	2	2250

C

Columbia Electric Vehicle Company, Detroit, Mich.

Model	Type	Pas.	Price
..	Runabout	2	*$1175
..	Brougham	4	*1575
..	Cabriolet	3	*1375

*Exide battery or U. S. L. battery $50 extra.

F

The Fritchle Co., Denver, Col.

Model	Type	Pas.	Price
..	Colonial Brougham	5	$3600
..	Colonial Coupe	4	3200

H

Hupp-Yeats Electric Car Co., Detroit, Mich.

Model	Type	Pas.	Price
4	Coupe	4	$1500
5	Coupe	4	1750

M

Milburn Wagon Co., Toledo, O.

Model	Type	Pas.	Price
22	Brougham	4	*$1685

*Extra charge for Edison batteries

O

The Ohio Electric Car Co., Toledo, O.

Model	Type	Pas.	Price
12	Coupe	5	*$2400
43	Brougham	5	*2900
63	Double Drive Brougham	5	*3250

*Battery is included in price.

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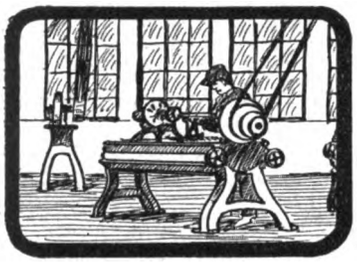
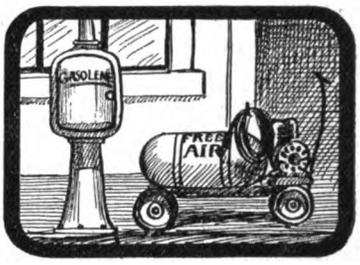


GARAGE EQUIPMENT



PORTABLE ENGINE STAND.

No part of an automobile requires as much attention and careful adjustment as the engine while it is being overhauled. Every garage man realizes just how hard it is to work upon an engine while it is in the chassis.

The Every Way Engine Stand is made to fill the demand for an adjustable table to which the engine can be fastened and work done upon it. This adjustable stand permits one to swing the work into any position through the whole circle of positions, holding it perfectly rigid in any position that is desired.

The stand shown in the cut permits the engine to be assembled upon it in any part of the shop, at any time, or at any stage of the work the engine on the stand may be wheeled to any other part of the shop.

Manufactured by the United Engine & Mfg. Co., Hanover, Penn. Prices upon request.

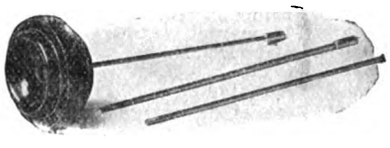
Portable Engine Stand.

AMERICAN SONOSCOPE.

A cheap, serviceable and efficient little device for the repair man's use in locating the knocks in an engine is sold under the name of the American Sonoscope. This instrument consists of a neat receiver with rubberoid casing, which has a cap to fit the ear, and of a sectional test rod which can be taken apart for convenience in packing. All the metal parts are nickel plated and it is furnished packed in a neat box, which can be readily carried in the pocket.

The makers claim the Sonoscope is so sensitive to sound that if the free end of the test rod is placed against the outside of a person's watch pocket the ticking of the watch will be as plainly heard in the instrument as if the watch itself were held against the ear.

Manufactured by the American Electric Co., State and 64th streets, Chicago, Ill. Price complete with carrying case, $1.50.



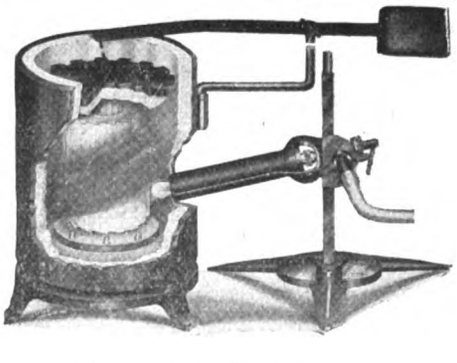
American Sonoscope.

ADJUSTABLE SHOP STOOL.

The New Britain shop stool will appeal to the garage owner who considers the comfort of his workmen. These stools are adjustable as to height, and have wood seats, correctly shaped and liberal in size. Holes in the base are provided for fastening stool to the floor, or it may be left movable. Stools may be provided with spring backs as shown in the illustration.

Made by the New Britain Machine Co., New Britain, Conn. Price, $30 per dozen. Spring backs, $12 per dozen.

Adjustable Shop Stool.



Johnson Auto Blast Furnace.

JOHNSON AUTO-BLAST FURNACE.

The Johnson Auto-Blast Furnace is intended for the garage owner who frequently has a call for small castings, or who has to heat treat steel. In this furnace solid chunks of carbon steel, four inches in diameter and five inches long, can be heated. The combustion chamber is adjusted to accommodate the piece of work being treated, so that the high temperature flame of the auto-blast burner entirely fills the space surrounding the work, thus insuring uniform heating with the least possible consumption of gas. The flame from the burner strikes the circular wall of the chamber and is made to rotate around the piece being heated, without striking it direct. No air blast is required, ordinary city gas pressure is sufficient for operating torch.

The outfit as illustrated consists of chamber and torch. One pair of 18-inch pick-up tongs, one No. 2 Dixon graphite crucible, one ⅜ inch combination hose cock, two work rest blocks and four feet of best red rubber tubing.

Manufactured by Johnson Gas Appliance Co., Cedar Rapids, Ia. Price complete as above, $27.50.

FIRE DOORS.

Every garage owner owes his patrons protection from the fire hazard and he should do all that lies in his power to make his garage fireproof. Merchant & Evans fire doors close automatically as soon as heat melts the fusible link which holds them open, this action cutting off the section in which the fire is burning and affording protection for the rest of the shop.

The sliding doors illustrated are double panels of standard 2½ inch corrugated 22 gauge galvanized steel, interlined with ⅛ inch asbestos, in a rigid frame of continuous 3/16 by 2½ inch bar iron. Heavy corner gusset plates prevent any sagging and provision is made for expansion and contraction without distortion.

Manufactured by Merchant & Evans Co., Philadelphia, Penn. Prices and specifications upon request.

DECARBONIZING DEVICE.

The Eureka Decarbonizing Device, mounted on wheels, as shown in the cut, is handy equipment for any garage. It is simply and durably constructed from metals that are not affected in any way by oxygen. The device consists of a reducing system and regulator with a hose

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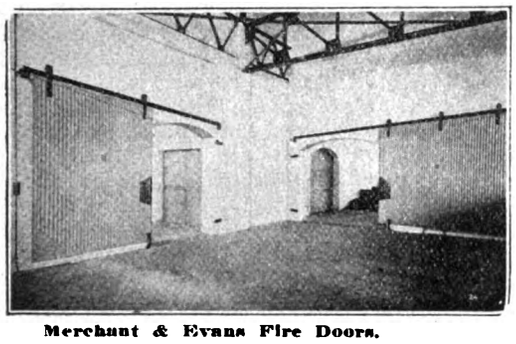


Merchant & Evans Fire Doors.

connection and metal nozzle equipment, with cut-off cock to regulate the flow of oxygen. The flexible metal nozzle is inserted through the spark plug hole or valve cap, and the carbon is removed from the cylinder by the oxygen coming in contact with it and the mixture being ignited by a lighted taper or match. The carbon and oxygen combine and burn, and form a gas which passes off, leaving the cylinders clean.

Manufactured by the Bishop-Babcock-Becker Co., Cleveland, O. Prices upon request.

THE HB CHARGING SET.

The HB Battery Charging set is a compact and efficient arrangement of a motor operating from a direct or alternating city current, mounted on the same shaft with a generator specially designed for charging auto starting and lighting batteries. Ball bearings support the motor generator shaft at each end.

The charging system is complete with switchboard and ready to operate by connecting the city current to the upper binding posts. After making these connections the switch at the right controls the motor. The current for charging is delivered through the lower binding posts and is controlled by the switch on the left. This current may be regulated by moving the handle of the rheostat in the middle of the board. An ammeter shows the flow of current through the battery terminals.

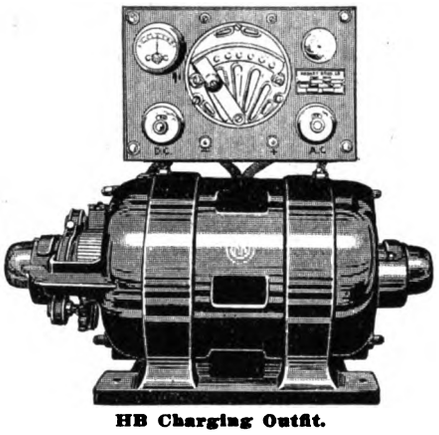
Automatic voltage control in the generator permits the charging of different voltage batteries at the same time. If batteries are connected up wrong, the negative pole of the battery to the positive terminal of the machine, the generator will protect the batteries by reversing its polarity.

Manufactured by Hobart Bros. Co., Troy, O. Price $10 cash and 10 monthly payments of $14 each.

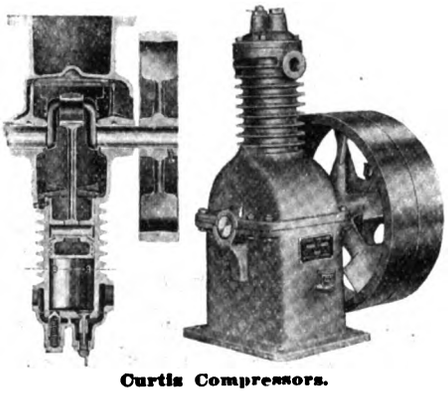
CURTIS COMPRESSORS.

The cuts shown on this page illustrate the Curtis model B compressors. A few of the exclusive features of the equipment are: Controlled splash, self-oiling system with cylinder oiling of the controlled splash permanently regulated, which feature prevents oil from getting into the tires and rotting them. High and low level oil filling gauge, showing at a glance the amount of oil in the crank case. Fan flywheel assists in cooling the

Eureka Decarbonizing Device.



HB Charging Outfit.



Curtis Compressors.

Lectroflater on Truck.

Using Searchlight Welding Equipment.

cylinder. Valves are of light weight and large area. Safety cage prevents possibility of broken valves dropping in cylinder. Adjustable, renewable, die cast non-cutting bearings. Head removable without breaking pipe connections.

Made by the Curtis Pneumatic Machinery Co., St. Louis, Mo. Prices upon application.

SEARCHLIGHT EQUIPMENT.

Modern garages and repair shops are beginning to realize that a welding apparatus is a good investment. It keeps the customers coming, for there is a big call for repairs in this line. Quick service is the thing that counts with the average car owner and he is often willing to pay more for a quick repair job than for an entire replacement, which entails delay and consequent loss of service.

Our illustration shows one of the many uses of the Searchlight welding apparatus. This maker produces a complete line of welding and cutting apparatus, gas and gas tanks for use on their apparatus.

Manufactured by the Searchlight Co., 415 Karpen building, Chicago, Ill. Prices upon request.

THE LECTROFLATER.

The Lectroflater carriage outfit, as illustrated, fills the need for a portable air pump. It operates on a new principle, which makes possible its small size, light weight, large air volume and high efficiency. The motor will run from any 110 volt lamp socket, direct or alternating current (220 volt machines furnished when desired), and will pump any size tire to required pressure in a very short time.

The manufacturers guarantee every Lectroflater to develop 125 pounds air pressure without overheating and to be free from imperfections in workmanship or material. All bearings, gears and pistons are automatically lubricated from a central source by the capillary system. There is no liquid lubricant or oil level to maintain.

Manufactured by The Black & Decker Mfg. Co., Baltimore, Md. Price complete, $80; without carriage, $65.

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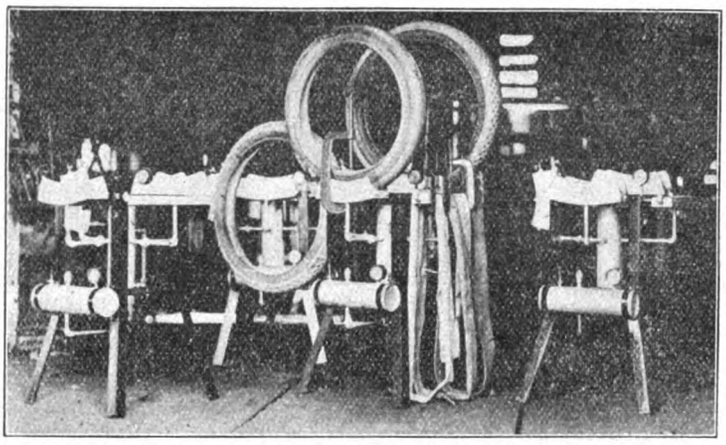
STEAM VULCANIZER.

The manufacturers of the Anderson Steam Vulcanizer claim to be the exclusive users of the sand bag system of vulcanizing. This feature enables them to dispense with the necessity of various sized molds and cuts down the cost of the machine. It is claimed that the pressure obtained by the Anderson machine is so great that the vulcanized rubber is pressed into the weave of the fabric, etc., forcing the tire and fabric to become practically one piece. The machines are equipped for either gasoline or gas heat, gasoline being preferable.



American Steam Vulcanizing Outfit.

Manufactured by The Anderson Steam Vulcanizer Co., Worthington, Ind. Prices supplied upon application.

ACCO CORK PRODUCTS.

Acco cork gaskets and washers made from a cork composition the makers say are impervious to oil, grease, gasoline or water. It is claimed that gaskets made from Acco cork composition will not grow spongy from use or soak up liquids.

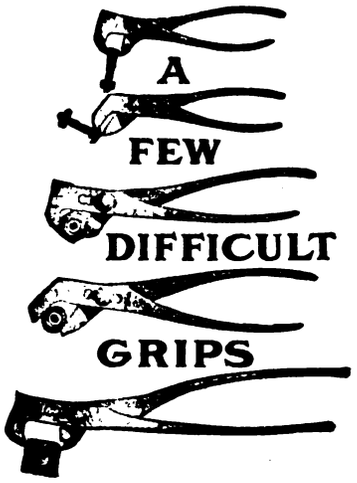
Acco Cork Composition may be purchased in 12x36 inch sheets, in three thicknesses—1/16, 3/32 and ⅛ inch, or made up by the manufacturers to sketches. A special Ford set of gaskets may be purchased.

Made by Armstrong Cork Co., Pittsburg, Penn. Write for free samples and prices.

HOLMES WRECKING TRUCK.

The Holmes wrecking truck is designed to meet the demands of the garage man for a rapid jack and a wrecking truck. It consists of a rigid and well braced frame mounted on two wheels, having generous hubs, containing Hyatt roller bearings. The wheels are reinforced with webs and are of a size suitable to easy pulling on rough roads. The frame and wheels are made of malleable steel castings and are practically indestructible.

Arranged to fit into this frame is a long, tapered, detachable tongue, made of second growth ash, heavily ironed, so that it can be used as a pry, in which case the wheels and frame act as a fulcrum. There is also furnished an axle rest, adjustable to any shape or size axle, either front or rear.



Eagle Claw Wrenches.

This is an apparatus that nearly every garage owner has use for and when it is needed it is needed badly. With it a car may be almost instantly jacked up for tire changes or wheel repairs. Two of these make a combination to permit the towing home of most any wrecked car. The weight of the truck is about 158 pounds.

Made by Robert Holmes & Bros., Danville, Ill. Price, $30. Write for illustrated literature.

EAGLE CLAW HANDY WRENCH.

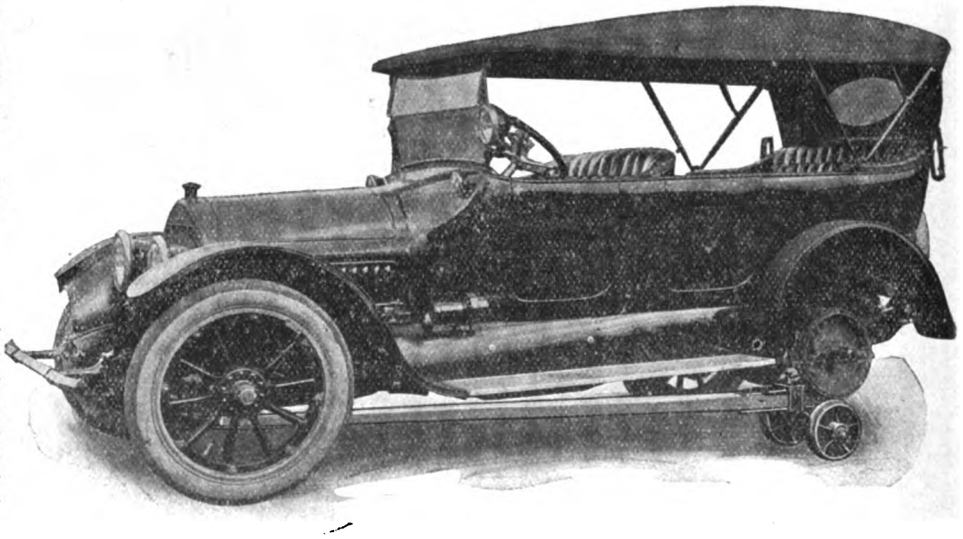
The Eagle Claw Handy Wrench, as the name implies, is a plier type of tool with specially shaped jaws to make possible a firm grip on variously shaped nuts, rods, pipes, or to secure a hold on parts in places not accessible to the jaws of conventional wrenches. They are made of dropped forged steel and very simple in construction. One type has the jaws set at right angles to the stem and the other has jaws set at an angle of 45 degrees.

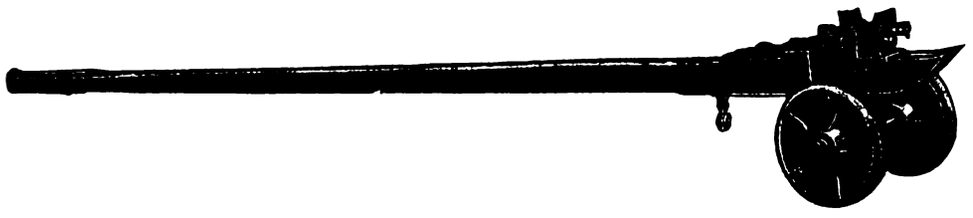
Made by the Mechanical Specialties Co., People's Gas Bldg., Chicago, Ill. Prices on application.

NASCO VALVE GRINDER.

The Nasco Valve Grinder is designed for grinding engine valves, regardless of size or quality of material from which they are made. In reseating valves with the Nasco outfit the makers claim that a perfect fit is obtained and that the contact surfaces are finished with glass like smoothness. The outfit consists of a grinder stand with one five-inch grinding wheel, complete with all attachments, one reamer handle, five pilots and four reamers.

Made by the National Auto Specialty Mfg. Co., Inc., Tama, Iowa. Retail price, $30.





At Top, View of How Holmes Wrecking Truck May Be Used on Wrecked Car; at Left, View of Components of the Truck.

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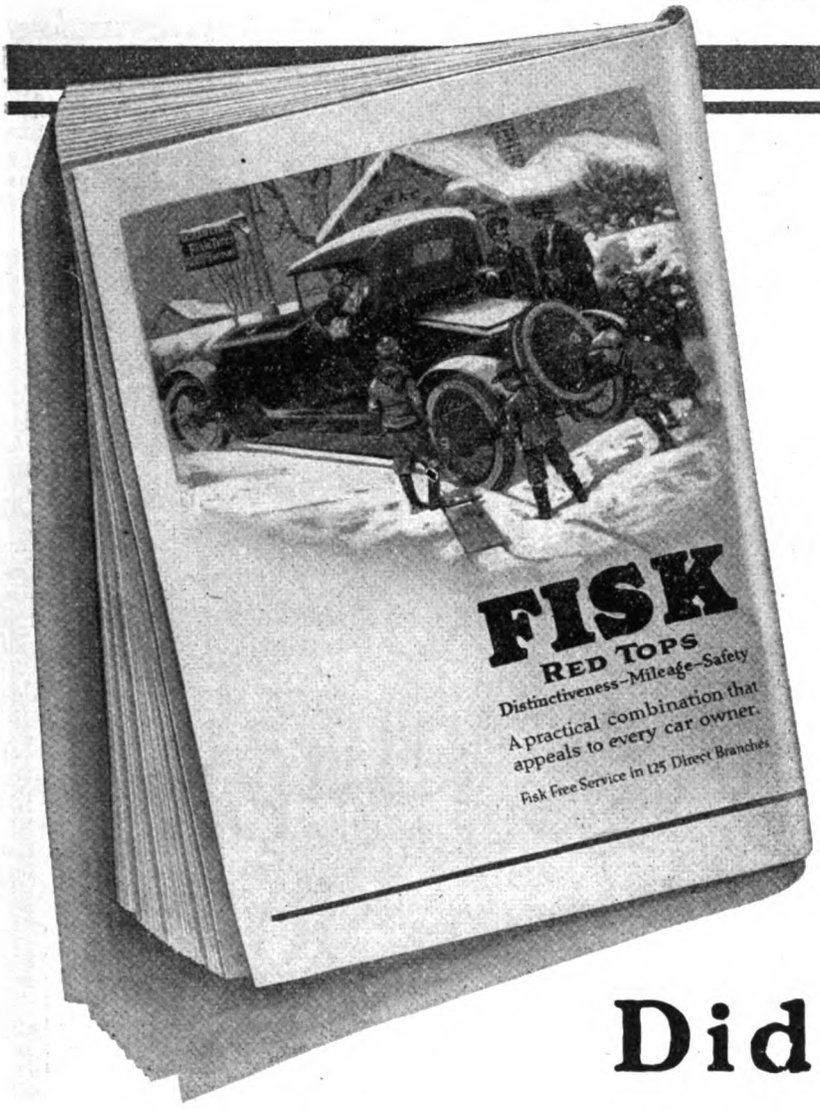

Did You See This Ad?

IT appeared during the past month in The Saturday Evening Post, Motor Life, American Motorist, and so on. It is the opening gun in the big campaign that is to continue throughout the year for the benefit of 65,000 dealers who sell

FISK TIRES

You who do not sell Fisk Tires still have ample time to reap your share of the profits to be made from this year's monster advertising plans.

Write at once to Dept. A for dealer plan.

THE FISK RUBBER CO.
of N. Y.
Chicopee Falls, Mass.

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In Every Test

made by the Engineering Departments of sixty-nine leading car manufacturers in which all makes of plugs were tried out

AC WON

Spark AC Plug

America's Champion

These High Class Cars Are AC Equipped

Cadillac
Pierce-Arrow
Packard
Marmon
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Hupmobile
Haynes
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Cole
Reo
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Saxon
Stutz
Dodge Brothers
Stephens
Velie

Buick
Oakland
Oldsmobile
Jeffery
KisselKar
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Knox
Jordan
Liberty
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Pilot
McLaughlin
Canada
Stearns-Knight
Singer
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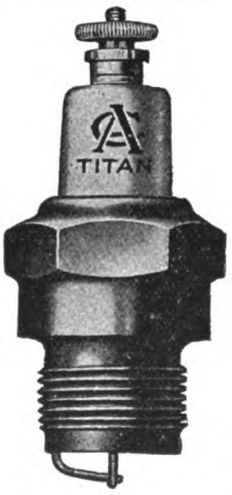
Jackson
Westcott

Look for the AC Burned into the Porcelain



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Signal Truck
Sandow Truck
Sterling Truck
Chase Truck
Netco Truck
White

Moreland Truck
Republic Truck
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Wilcox Trux
Gabriel Truck
Murray
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Follow the Lead of the Leaders. They have done the experimenting for you

The Standard Spark Plug of America

Champion Ignition Co., Flint, Mich., U. S. A.

MR. DEALER:
Can you think of another motor part used by as many high class manufacturers as AC Plugs?

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UNIVERSAL TRUCK ACCOUNTING SYSTEM

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It affords every detail of time and work of any number of machines, the labor, operating cost, revenue and earnings, with comparisons for any period, in one record book and day card for each truck.

The simplest and most comprehensive record ever conceived, adaptable for use with any method of house bookkeeping or independently, that can be made to serve as part of any method of accountancy.

The most intensely practical system of accounting ever devised, that can be maintained by a girl clerk and which has no limitations.

When you know the exact cost of truck operation and what is earned through the use of any vehicle, you have data of the greatest practical value.

Detailed information at request. When writing state number of trucks in use.

The Motor Truck

TIMES BUILDING *PAWTUCKET, R. I.*

MOTOR TRUCK

Construction
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Care

PRICE ONE DOLLAR

A work that is complete, wholly practical and deals with all subjects as the title implies.

Truck Care
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Truck Operation
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$1.00 the copy. In combination with a yearly subscription to Motor Truck (the great national authority on highway transportation, issued monthly) $2.00.

This is the only book published dealing with business wagons, it is fully illustrated and represents a wonderful value.

THE MOTOR TRUCK

Times Building **Pawtucket, R. I.**

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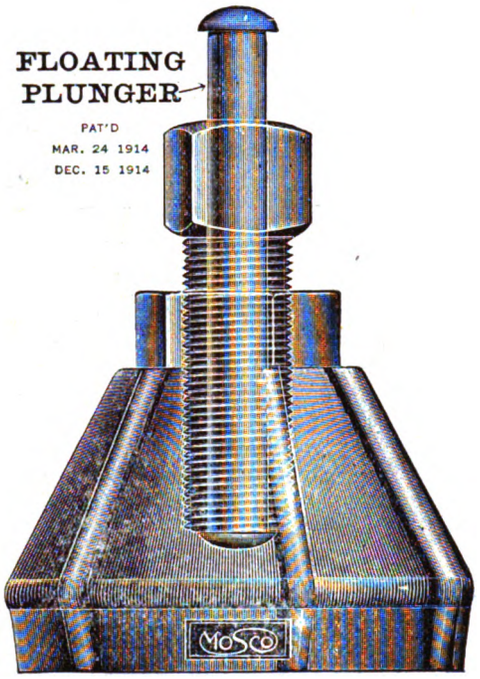
TACK THIS UP FOR FUTURE REFERENCE

A STANDARD WHEEL PULLER FOR REPAIR SHOP OR OWNER.

MADE FOR 170 MODELS OF 32 POPULAR CARS.



STARTS A "FROZEN" OR "STUCK" WHEEL INSTANTLY. STRIKE THE PLUNGER, TURN THE SCREW, STRIKE AGAIN, AND THE WHEEL COMES OFF WITHOUT INJURY TO HUB-THREADS, SPOKES OR AXLE.

THE MOSCO FLOATING PLUNGER WHEEL PULLER.

Made for the following cars.

Car	Model	W. P. No.
Abbott	6-44	16
Apperson	6-17, 8-17	20
Auburn	6-39, 6-44	5
Briscoe	4-24	16
Buick	10, 24, 25, 26, 27, 32, 33, 34, 35, 36, B24, B25, C24, C25	4
Buick	16, 17, 19, 21, 28, 29, 30, 31, 41, B36, B37, B38, C36, C37	5
Buick	D35	14
Buick	D44, D45, D46, D47	20
Case	4-T	4
Chalmers	6-30, 6-30-7, 6-40, 7-22	18
Chandler	1916-17	4
Chevrolet	H2, H3, H4, F5, D	4
Chevrolet	4-90	2
Daniels	A 1916 and early 1917	4
Daniels	late 1917	5
Davis	6-H	5
Empire	30, 31, 40, 45	4
Empire	60-R	20
Ford	All Models	2
Franklin	Series 4 to 9	14
Hudson	20, 33, 1910-11, 33, 1912	4
Hudson	H, G, 8, 15-40, 16-40	18
Interstate	1917	4
Jeffery	471, 472, 661, 671	24
Jordan	60	18
Lexington	6-O	20
Liberty	10A	18
Maxwell	All cars No. 52001 to 54000	6
Maxwell	" " " 54001 to 84350	7
Maxwell	" " " 84351 and up	8
Moline Knight	40C, 50C	5
Oakland	40, 42, 48, 49	5
Oakland	30, 35, 36, 37, 38	4
Oakland	32	6
Oakland	32B, 34	14
Oldsmobile	42, 43	22
Oldsmobile	44	20
Overland	60F, 60T, 69R, 69RE, 69F, 69T, 69TE, 79R, 79RE, 79T, 79TE, 80 RE, 80TE, 81RE, 81TE, 83T, 83R, 83del, 85-4, 85-6	3
Overland	75 and 90 except wire wheels	6
Paige	4-36, 6-46, 6-36, 6-38	16
Peerless	54, 55, 56	18
Pierce Arrow	36. 38	24
Premier	6-B	18
Reo	R, S, ST, J, 1912-13-14	22
Reo	J, F, M, N, R, S, 1915-16-17 Special	12
Saxon	S2, S4	3
Saxon	BR, 14R, B5R, R all models	4
Velie	15, 27	18
Velie	22, 28	20

Your Jobber has them in stock. *New models continually being added.*

MOTOR SPECIALTIES CO. MANUFACTURERS **WALTHAM, MASS.**

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Boston Automobile Show

The Largest Exhibition of Pleasure Cars, Motor Trucks and Accessories Ever Made in America

Three Great Departments in Mechanics' Building and Horticultural Hall

HUNTINGTON AVENUE

MARCH 3—10 (Inclusive)

The number of exhibitors of pleasure cars, chassis, complete cars and special bodies, will be the greatest the industry has ever known at one show.

The Motor Truck Department will include trucks, delivery wagons, tractors, trailers, semi-trailers, conversion units and special bodies and equipment.

The Accessory Department will be larger in number and character of exhibits than has ever before been made.

All the products of the world's greatest industry will be exhibited.

This show will be as attractive for the Jobber, Dealer, Repairer, Service Station, and Garage Man as for the owners and users of cars, trucks or any form of mechanical highway transportation equipment.

The Decorations Will Be the Most Magnificent Ever Seen in Boston.
Orchestral and Band Concerts Afternoon and Evening.

ADMISSION - - - 50 cents

Personally directed by CHESTER I. CAMPBELL for the Boston Automobile Dealers' Association, Inc., and Boston Commercial Motor Vehicle Association, Inc.

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Published the 15th of Each Month.
D. O. Black, Jr., Secretary
Times Building, Pawtucket, R. I.

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VOL. VI. PAWTUCKET, R. I., FEBRUARY, 1917. NO. 10.

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SAVE 50% ON PARTS

Wheels, Axles, Gears, Bearings, Cylinders, Pistons, Crankshafts, Camshafts, Crank Cases, Transmissions, Hubs, etc., for E. M. F. 30, Maxwells Q. F. K. G. Overland 38, 42, Reo 1910, Empire 20, Buicks 10, 17, 19, Oakland 1910, Cadillac 1909-12, Mitchell 1907-12, Flanders 20, Warren 30. Ask us about any part for any Standard Make or Orphan Car. Prompt service. Money refunded if not satisfied. AUTO PARTS CO., 4100 Olive St., St. Louis, Mo.

DON'T TURN AN ORDER DOWN—

Whatever your customer wants—an accessory, a service part, or a repair part for an "orphan" car, ask us the price—you'll find it worth while—and having over 2,000,000 parts in stock, you will not have to wait. Write for our Bargain Bulletin.

PURITAN MACHINE CO.
All Parts for All Cars.
51 Tenth St., DETROIT, MICH.

We supply parts for over 100 Orphan Cars. What you need we have.

SPRINGS
Coiled and Flat.

Steel, Brass and Phosphor-Bronze Springs, Cotters, Small Washers.
16 lbs. Assorted Springs, $2.00
25 lbs. Assorted Cotters, $3.00
Every repair shop should have this assortment in stock. Send for Catalog.
HUBBARD SPRING WORKS,
400 J St., Pontiac, Mich.

Debts Collected Quickly. Established 25 years; same address. WM. H. CARD, Dept. D, 87 Nassau St., New York.

WANTED—Salesmen to sell Golden Rod Tire Pumps on commission. BERCK & JADEN, Hastings, Neb.

Do You Want Foreign Business?

The Motor Vehicle market is open to all American producers of cars, trucks, parts, fittings, supplies, accessories, Mechanical and electrical equipment and tools.

8000 Foreign Buyers in 85 Countries

We have the only direct means through which to reach this market. Every manufacturer has the means.

For Foreign Business Act Today

Automobile Journal Pub. Co.
Times Building, Pawtucket, R. I.

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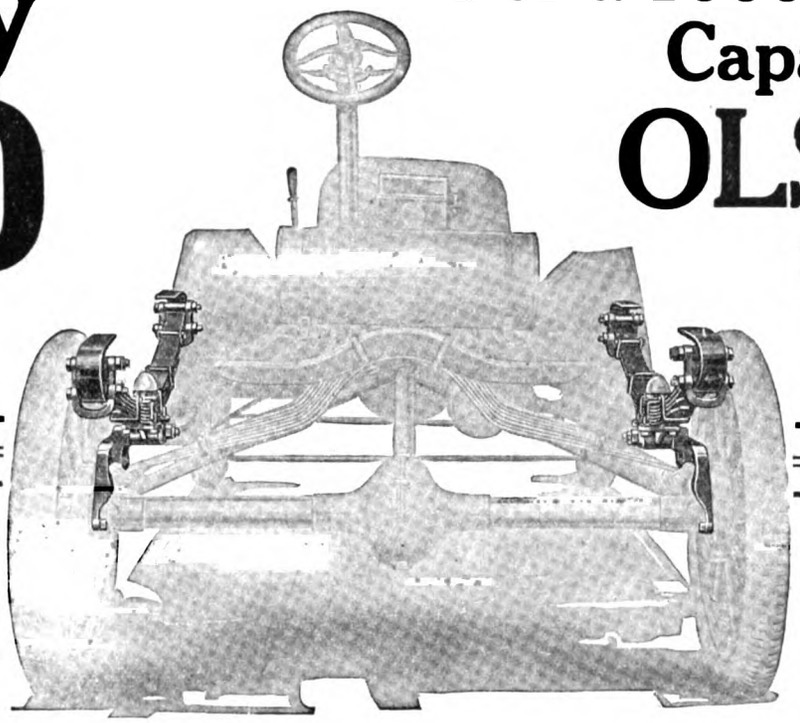
Only $30

For a 1000-1500 lb. Capacity OLSON Unit For Fords



OLSON 1000-lb. Capacity UNIT

Attached To a Ford Chassis

For 1000 lb-Loads 5 Leaves

For 1500 lb-Loads 7 Leaves

Saves So Much That It Sells On Sight

Thousands of farmers, grocery men, butchers, delivery firms, draymen, retailers—business men in nearly every field, have use for a 1000-lb. to 1500-lb. capacity motor truck.

Their requirements are **a reliable truck**—always ready to go, and carry its load.

These men are prospects for converted Fords. How the Ford is converted they don't care—as long as it gives service.

How much it costs they do care. Thousands of them will pay $30 for an OLSON Unit—thousands who are not even prospects for other units that serve them no better than the OLSON Unit, but cost 10 times as much.

Price—saving—service sell OLSON Units on sight. They sold at the rate of 1000 a month for 10 months before they were advertised. They are going faster than that now, with our big advertising drive behind them.

Get out and show the OLSON Unit. Attach one to a Ford chassis and **demonstrate** in your territory. **$30 makes sales,** where $350—what some other units cost—fails.

The OLSON Unit is attached without removing a single member of Ford construction. It deflects the load direct to the wheels where it must ultimately be carried, instead of conveying it through the frame, springs, axle, differential, etc. This makes the simplest, cheapest, most efficient attachment for the Ford delivery car.

Write for complete details of selling plan and salesmen's success. Our capacity is **1000 sets a day. It insures immediate delivery always. Write today for free illustrated literature and complete details.**

SWEDISH CRUCIBLE STEEL CO.

FACTORIES

Detroit, Mich., U. S. A. **Windsor, Ont., Can.**

Chicago Branch: 1344 Michigan Avenue

ADDRESS: WHEEL DEPARTMENT

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ACCESSORY MANUFACTURERS!

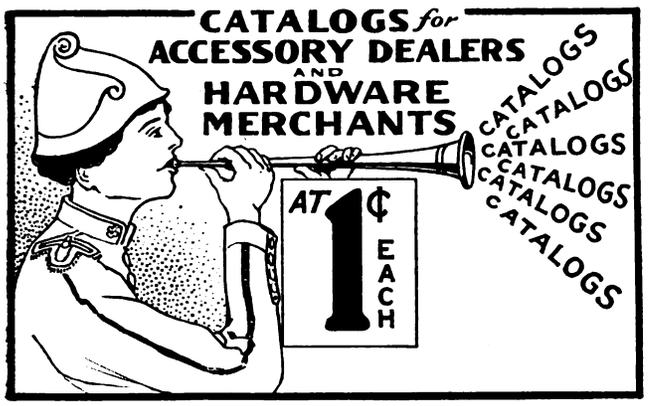
Illustrate Your Merchandise In the Catalogs We Furnish Through Dealers to Car Owners.

More Than 400 Supply Dealers Used Our Catalogs in 1916

FOR PARTICULARS ADDRESS

CATALOG SYSTEMS CO., - - Fisher Building, CHICAGO

ACCESSORY CATALOGS



We will supply them to Accessory Dealers while they last.

Any Accessory Dealer or any Hardware Merchant in the United States can have a Limited Supply of Accessory Catalogs for Distribution Among His Own Customers

AT ONE CENT EACH

While the supply lasts. The only requirements we make are that you are selling Accessories; that you have a satisfactory credit rating; that you agree to distribute them within 90 days from date of their receipt. As our supply is limited we are obliged to adopt the above policy.

FIRST COME! FIRST SERVED!

For Further Particulars Address

Catalog Systems Company
Wilmette, Illinois or Fisher Building, Chicago

ACCESSORY MANUFACTURERS!

Our catalogs go only to Car Owners and Supply Dealers.
Such a circulation has character.

Our catalogs reach car owners in every state.
Such a circulation has breadth.

Our rates for representation are low. The test of all advertising should be
Character of Circulation---Breadth of Circulation---Low Cost.

Our advertising embodies these features.

FOR PARTICULARS ADDRESS

CATALOG SYSTEMS CO., - - Fisher Building, CHICAGO

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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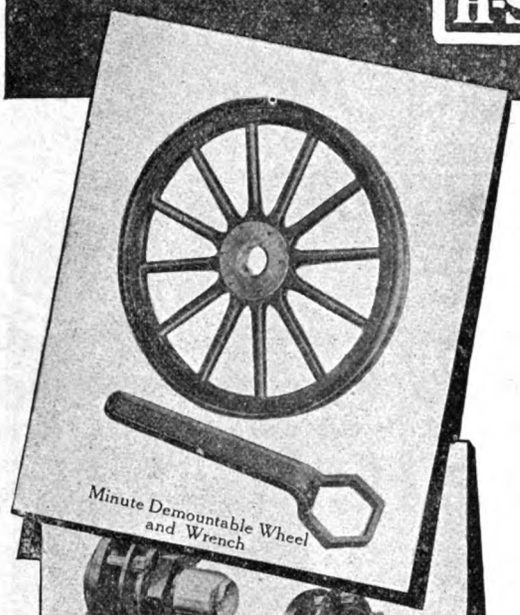
H-S **Repair Parts**
for Ford and Overland Cars


Minute Demountable Wheel and Wrench

Four Minute Wheel Hubs—to replace Ford Hubs

H-S Letts Manifold Heater for Ford Cars

H-S Page from Repair Parts Catalogue

"A Tire Changed in 60 Seconds"

THE MINUTE DEMOUNTABLE WHEEL

We believe this the best Ford accessory on the market today because it is the most needed.

"One nut to unscrew--that's all you do."

FEW Ford Owners care to drive without some quick change tire device. Until recently the demountable rim was their only choice. Now at practically the same cost they can have the luxury of cars in the high price class and carry their tire on a spare wheel. Double protection, no soiled hands or clothes, no temper trying prying off of mud and rust encrusted rims, no delays when delays mean a marred trip, a lost appointment—these are a few of the advan ages.

Price Only $30.00

Equipment as shown at left. *Send for Booklet—"The Minute Wheel"*

H-S Lett's Manifold Heater

Price $6.00

Now in two types for Ford and Chevrolet cars 20 to 40 per cent. more mileage.

Without a single exception two years of the most exacting tests proved excess mileage gains over the guarantee. As high as 35 miles to the gallon on a Ford car in an 800 mile trip was made, and three earned for one truck user price of new truck in a year. Reorders coming in from every dealer featuring it. You should send for book, "Mileage," Mr. Dealer, and particulars.

FEATURES:—

Saves more than a fifth of gas.

Prevents carbon.

Stops boiling radiators in summer.

Lessens spark plug trouble.

Can be opened to clean an essential feature for the success of any manifold heater. Put on in 30 minutes.

Does not alter or interfere with any part of engine.

Dealer: H-S Accessories and H-S Repair Parts are sold through H-S jobbers. Write for booklets on The Minute Demountable Wheel and H-S Letts Manifold Heater.

H-S Repair Parts—Ford—Overland

Send for catalogue eshowing over 400 parts—the highest quality and perfect fit are guaranteed. Your customers will be glad to know you carry H-S parts. They are nationally advertised. Send to your nearest H-S jobber or write us for his name.

HIGHEST QUALITY H-S PROMPT SERVICE

HILL-SMITH METAL GOODS COMPANY
MANUFACTURERS OF MOTOR PARTS AND ACCESSORIES
REPAIR PARTS FOR THE FORD AND OVERLAND CARS
BOSTON, MASS.

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Liners—Shims

Perfection Snap Cable Terminal

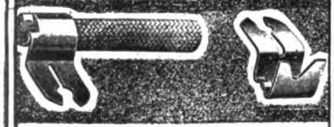
Standard Battery Con.

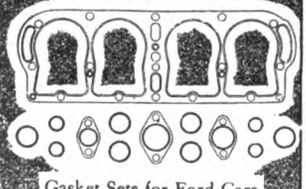
Clero Electric Push Buttons

Standard French Type Gaskets

Ford Lighting Outfits

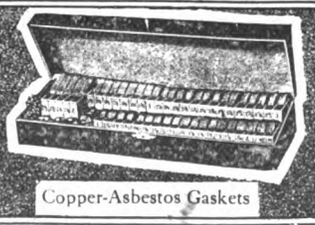
Spark Plug Gaskets Carried in Stock


Copper and Brass Cable Terminals


Gasket Sets for Ford Cars

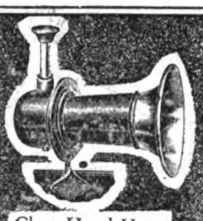
Flange Exhaust Gaskets

Slip Snap Terminals


Copper-Asbestos Gaskets

Slip Snap Terminals

Two Point Hard Rubber Switches


Clero Hand Horn

Clero Electric Push Buttons

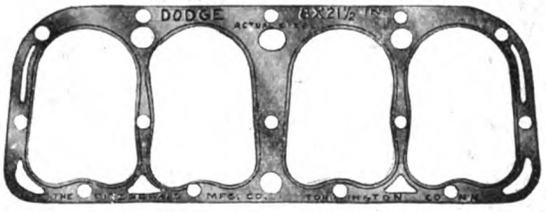
FITZGERALD MFG. CO.

Never-Leak

COPPER-ASBESTOS

GASKETS

There's as much need for quality in a gasket as in any mechanism of the machine you use, and this applies to material and to shapes that fit. We use stock that is highest grade, and produce gaskets suited for every practical need with automobile vehicles. We've specialized gaskets just as we have a very wide range of sheet metal products, and today are producing cylinder block gaskets for



FORD	VIM	DODGE
OAKLAND	ENGER	[illegible]E
CHEVROLET	MAXWELL	(75) OVERLAND (83)

There's no economy in using makeshifts. The best results are obtained from the specialty. We can supply anything in gaskets, and cheaper than they can be obtained elsewhere. We are the largest manufacturer in the industry and we have attained this position by quality of products and reasonable prices.

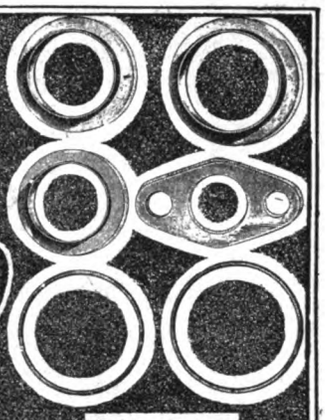
We can make deliveries to schedule.

We manufacture and can quote you the best prices of the industry for the same qualities.

Catalogue and Price Lists Supplied at Request.

FITZGERALD MFG. CO.,

TORRINGTON, CONNECTICUT


Cadillac Gaskets

Standard "Lug" Type Terminals

Perfection Spring Battery Con.

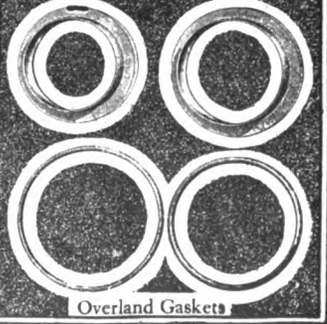
Shim Stock

Steering Post Attachments

Ford Ignition Assembly

Standard Closed Type Gasket

Standard Flange Fittings


Overland Gaskets

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ADVERTISING won't make Havoline Oil a better lubricant for automobiles. But it will make you better acquainted with Havoline and will heighten your confidence in it. The present big Havoline advertising drive would be a waste of money unless Havoline in actual use proved itself to be MORE than just a good motor car lubricant

HAVOLINE OIL

Reg. U. S. Pat. Off.

"It Makes a Difference"

Striking Havoline advertisements will appear in rapid succession in the

Saturday Evening Post	**Collier's**
Literary Digest	**Leslie's**
Christian Herald	**Life**

and other great periodicals. Copy will also appear in the leading automobile journals, and in a big list of farm papers.

This impressive volume of Havoline advertising on a national basis serves two effective purposes.

FIRST. It is a guarantee of quality — for no manufacturer would dare advertise his goods in this manner unless they absolutely delivered the values that the buyer was led to expect.

SECOND. It will bring the demand for Havoline to the door of the dealer in a volume that has never before been touched — for forty million readers cannot be reached with this frank, sensible, straightforward deluge of Havoline publicity without a great wave of response.

These two objects loom back of the investment of the refiners in this campaign. The size of the investment should leave no doubt in the mind of any dealer, owner, or manufacturer that Havoline's makers are offering a correct lubricant for automobiles.

Havoline is easy to recognize — to identify. It comes to you in sealed cans, dark blue with white lettering, containing full measure.

Havoline advertising, coupled with the sound, consistent principles of Havoline merchandising, is the dealer's guarantee of steady sales.

Indian Refining Co., Inc., New York

Producers and Refiners of Petroleum

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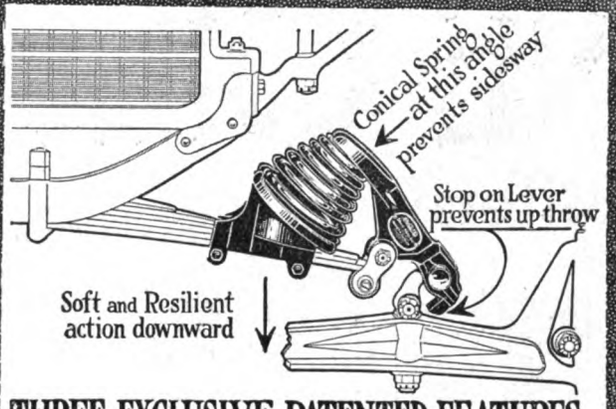
HASSLER
Shock Absorber
— For FORD Cars —



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"

— 100000 FORD OWNERS RECOMMEND IT —

WRITE FOR DEALERS TRIAL SET PROPOSITION

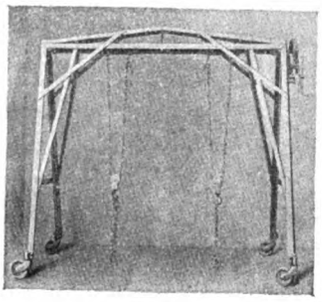
$15 for a Set of Four

Robert H. Hassler, Inc.
Indianapolis, Ind.

MILLER AUTO HOIST

The Miller Auto Hoist builds business for repair shops, because it enables the completion of big jobs in half the time and at half the cost of shops without such equipment. ***A constant money earner, always in use.***

Let One Man Do the Work of Ten.



Save 90% of Time and Labor.

ON ALL YOUR LIFTING JOBS

Designed and built for the hardest service.
Invaluable for removing and replacing motors, transmissions, bodies axles, repairing springs, overhauling, etc., etc. **Send for Circular.**

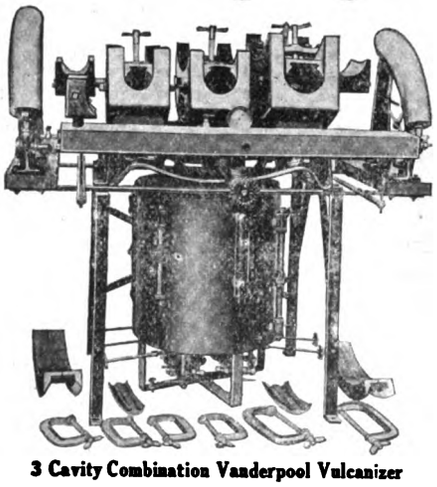
PORTABLE TOOL SUPPLY COMPANY, Inc.
Ellicott Square, Buffalo, N. Y.

Portable Tool Supply Co., Inc., Buffalo, N. Y. Gentlemen—Please send complete description and price of Miller Hoist

Name _____

Address _____

Vulcanizing With a Vanderpool Vulcanizer Brings Big Profits



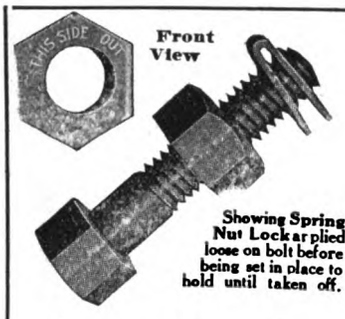
3 Cavity Combination Vanderpool Vulcanizer

Here is an exceptional opportunity for Garages as well as Vulcanizing Companies to secure a vulcanizer that will turn out high-grade work at a small cost. The fuel saved alone, will pay for the machine in a short time—then you will "cash in" on your investment. This plant, the Vanderpool Vulcanizer, is meeting with enthusiastic approval of hundreds of satisfied users all over the country. Unsolicited testimonials from the various companies now using the "Vanderpool" testify to the dependability, efficiency and economy of this "Vulcanizing Wonder." One man writes that the first month's profits paid for the plant. No experience needed—we teach you how. It occupies very little floor space, and "once bought, you will never have to buy again."

Send in this ad with your name and we will mail catalogue and prices.

VANDERPOOL COMPANY

Box 63 **SPRINGFIELD, OHIO**



Showing Spring Nut Lock applied loose on bolt before being set in place to hold until taken off.

Why Not Be Sure

that every part of the engine; chassis, or body of the car you make will **stay** together until taken apart?

Spring Nut Locks

are the simplest, surest, safest device to positively lock any nut on any bolt. Resists all vibrations. Cannot harm threads. Easily applied. Released whenever desired. Cheapest and Best.

Manufacturers, Jobbers, Garage Men, Repair Men and all Dealers should write for prices on sizes now available. Orders filled in rotation. All sizes by January 1st.

Spring Nut Lock Company

651 Transportation Bldg.
Chicago

Spring Nut Lock tightened against Nut. Prevents Nut being shaken off and follows Nut tightening against material.

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Retail Price $5.00 PER SET

Give Car_____

Model_____

Year_____

When ordering

PEDEX

THE ADJUSTABLE EXTENSION PEDAL

Garages, Service Stations and Accessory Dealers should all carefully consider PEDEX.

1. *A necessity for the family car.*
2. *Insures proper leverage.*
3. *Eliminates driver cushion.*
4. *Rigid when attached.*
5. *Leaves regular pedals clear.*
6. *Adjustable to any length desired*
7. *Attachments to fit all cars.*
8. *Absolute safety.*

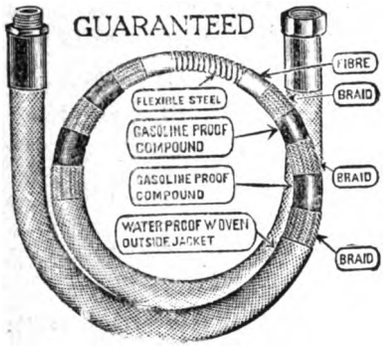
Send for Literature, Discounts, Etc.

AMERICAN CAR ACCESSORIES CO.

Dept. S. A. S. Laboratories, Inc. 529-531 W. 21st St., New York City.

Everlasting Gasoline Hose

All the Name Implies



A Hose that is not damaged by gasoline as there is no rubber in it. It is oil and dust proof.

The core is made of steel, covered with two plys of gasoline proof compound, covered with a heavy woven waterproof outside jacket.

The Everlasting is even more flexible than rubber hose. In use it will not scratch or mar the finish of the car and it is guaranteed for one year.

Made in two sizes, 3-4 in. and 1 1-4 in. with couplings attached. Sold in standard lengths 8, 10, 12 and 15 feet, but supplied in any length.

¾ in. $1 per ft. coupling, house a I. P. T. $1.50.

1¼ in. $2 per ft. coupling house a I. P. T. $3.00.

CHICAGO TUBING AND BRAIDING CO.
224 No. Clinton Street, Chicago, Ill.

Bunting Bearing Bronze

IN Cored Bars

Bunting Bearing Metal is standard today with both Manufacturer and Repairman.

Is for sale by most any Jobber or can be purchased direct from us.

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approximate weight
A	1	½	12	2
B	1⅛	⅝	12	3½
C	1¼	¾	12	5
D	1⅜	⅞	12	7
E	2	1	12	8½
F	2⅛	1⅛	12	10
G	2¼	1¼	12	11½
H	2⅜	1⅜	12	12½
I	2½	1½	12	13½
J	2⅝	1⅝	12	15½
K	2¾	1¾	12	17
L	4	3	12	21
M	4¼	3¼	12	30

The Bunting Brass & Bronze Co.
727 Spencer Street Toledo, Ohio

FORD TYPE
$18 Set of Four
With Rings and Pins.
STOCK PATTERNS FOR CHALMERS, WHITE, REO and Others.

DODGE TYPE
$20 Set of Four
With Rings Only

Featherweight LIGHTER THAN ALUMINUM Pistons

Will Put "PEP" Into That Sluggish Motor.

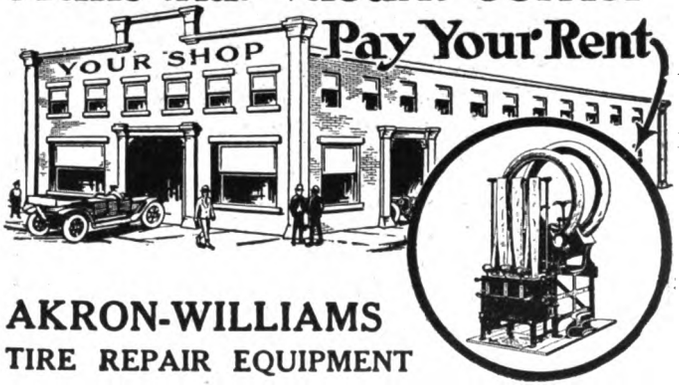
Being one-third as heavy as the cast iron cannon ball type, they *increase* power and speed and *reduce* vibration, carbon deposit and wear on bearings, and *save* fuel.

Dealers Write Today For Discounts

FEATHERWEIGHT PISTON CO.

11 Guyman Way,
Pittsburgh, Pa.

Make that Vacant Corner Pay Your Rent



AKRON-WILLIAMS
TIRE REPAIR EQUIPMENT

Every motorist who enters your doors is willing and anxious to have his tires and inner tubes repaired—kept in the best condition—till the last bit of mileage is taken out. To do the best work and make the best profits, you must have the best equipment—the AKRON WILLIAMS.

Used by 60 Leading Tire Companies.
(Names furnished on request.)

And sold and recommended by them to their dealers. Scarcely any other business pays such large and sure profits on such a small investment. We show you how to make money right from the start.

Send for our new "Booklet 12."

THE WILLIAMS FOUNDRY & MACHINE CO.
ASH STREET, AKRON, OHIO
Exclusive Californian Distributors:
Waterhouse & Lester Co., San Francisco and Los Angeles.

SELL SULLIVAN TRUCKS

One of the few staple and practical trucks on the market.

Our selling policy and proposition is the most liberal ever offered to the trade.

One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
Rochester, New York

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WHITNEY
ARBOR PRESSES

Found in shops of reputation

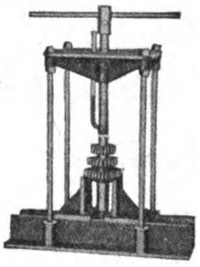
STOP HAMMERING!

And Use This Up-to-date Method

RELIABILITY

DURABILITY **SIMPLICITY**

No. 1—30 Ton



No. 2—50 Ton

Manufactured exclusively by

LEWISTON MOTORS

LEWISTON, ME.

Write for Circular and Quotations

INVESTIGATE

The New

ELECTRIC ISCO SYSTEM

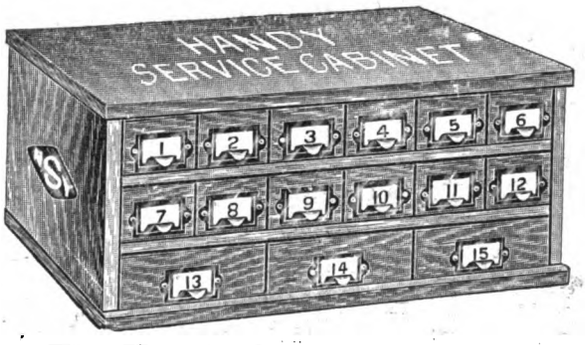
ELECTRIC STARTING and LIGHTING SYSTEM

an innovation in two-unit systems. Starter equipped with Bendix drive. Generator spun for hours at 7500 R. P. M. and never sparked once. Very powerful starter, but consumes little current. Accessible for cleaning, by merely removing four thru-bolts. Can be installed in a Ford in 3½ hours.

$75.00 Complete for Fords

DISCO ELECTRIC STARTER Corp.

DETROIT



The Handy Service Cabinet

HERE is one of the best little cabinets made for taking care of screws, bolts, nuts, repair parts, spark plugs, and all kinds of small parts that are usually hard to find when wanted.

Particularly Suited to the Requirements of the Small Private Garage, Repair Shops and Supply Stores.

THE HANDY SERVICE CABINET is substantial and well finished. The front and sides are ¾ inch varnished oak. There are fifteen drawers with galvanized steel sides and bottom. They may be built upon each other as your business grows.

The price is extremely reasonable for this cabinet—it lists for $5.00.

Better order one at once from your jobber—also a catalog of larger unit sections.

DEALER'S PRICE $5.00

STEVENS & CO.

Mfrs. of Auto Accessories. 375 Broadway, New York.

Jointless Piston Rings

There are no substitutes for Jointless Piston Rings. The Jointless affords every quality found in other rings and assures to all users a permanent, gas tight ring, more power, less carbon, increased mileage, less gasoline and lubricating oil.

The Jointless eliminates all usual piston ring troubles. It is finely constructed and its efficiency makes the Jointless a money making and saving proposition for any owner of a pleasure car or truck.

List Price $1.00

Sold by all Jobbers and Dealers.

DETROIT PISTON RING CO.

53 Richmond Ave. Detroit, Mich.

Trade Subscription Offer

Including three motoring magazines—one gives over to the pleasure car field—another to commercial vehicles and the third to industrial interests. Each magazine distinct.

The lowest rate ever made for leading motoring papers. Write for details.

ACCESSORY & GARAGE JOURNAL

Times Building Pawtucket, R. I.

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SOLD ONLY TO THE TRADE

THE MARTIN LINE

Tire Covers, Radiator Robes, Inner Tube Cases, Water Buckets, Engine Robes

All jobbers and dealers should send a sample order. Do it before you stock your 1917 line. **Quality, prices and discounts are not met by any other manufacturer.**

No catalogue is complete unless the Martin Line is shown and listed.

Send today for latest circulars and discount sheets.

THE MARTIN MANUFACTURING CO.

LANCASTER, OHIO

Automobile Mailing Lists 1916

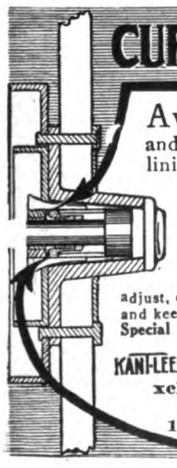
28,103	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
8,123	Ford Dealers, price $17.50, or $3 per M by states.
285	Ford Dealers, Canada, $1.50.
28,463	Auto Garages, price $40, or $2.50 per M by states.
29,306	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
65,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
940	Auto Supply Jobbers, price $4 for the list.
4,093	Auto Tire Dealers, price $3 per M.
2,404,150	Auto Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.
643,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

Write for particulars of any list you want.

A. F. WILLIAMS, Manager,

Phone Franklin 1182. 164 West Adams St., CHICAGO

CURE LEAKY REAR AXLES



Avoid grease and dirt on hubs and wheels, oil-rotted tires, oil-soaked brake linings and dry bearings on your FORD.

KANT-LEEK WASHERS For Fords

are the positive and inexpensive remedy. A set of four makes grease "stay put" Simple, nothing to adjust, easily applied They'll end rear-axle bearing troubles and keep repair bills down. **Per Set, 90c.**

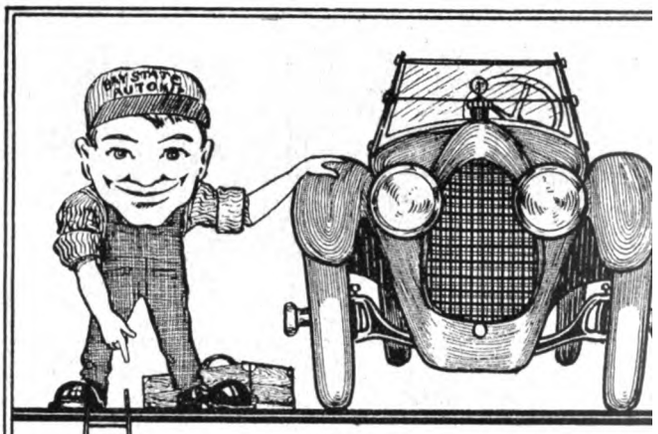
Special Discount for Dealers and Jobbers.

KANT-LEEK MFG. CO., Saint Louis, Missouri.

xclusive Selling Agent, HARRY BECKER

Room 306 Monroe Bldg.,

104 So. Michigan Ave., Chicago.



When the ladder of fame, you start to climb,
To make the Dollars you count your time.
Every man's aim with all his might,
Is the top of the ladder to get in sight.

Right to the Point

In the Bay State Autokit, there is a size of socket to fit any nut, bolt or set screw, on any car or truck.

There is an adjustable rachet handle and shank that permits the repairer to reach any job and from any angle or position.

BAY STATE AUTOKIT NO. 3

Set No. 1, 31 Sockets - -	$10 00
Set No. 2, 12 Sockets - .	7.50
Set No. 3, 11 Sockets (For Ford Cars)	4.00

There can be no time or labor lost in any shop that has a Bay State Autokit. No other wrenches are needed or necessary. It is a complete wrench equipment for the garage, repair or machine shop.

Guaranteed tools—made for the hardest service.

George A.

CUTTER

Sales Agent

Taunton, Mass.

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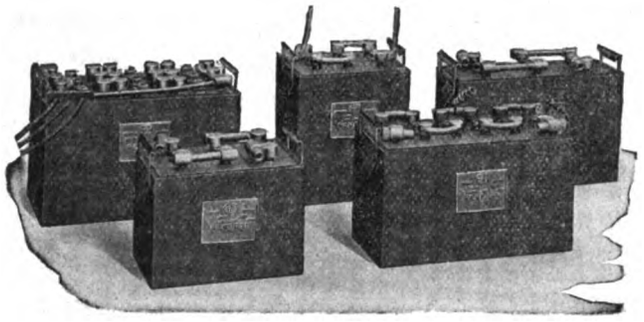


APOLOGIES and EXCUSES

DON'T BRING BACK CUSTOMERS

Quality alone counts. Titan Storage Batteries made with Titan (overload capacity) Grids insure satisfaction alike to dealers and customers.

Titan Batteries and Parts satisfy every demand of a First Class Service Station in variety, in quality, in price and prompt delivery.

If you place your own reputation and your own profit first it will pay you to write the

GENERAL LEAD BATTERIES COMPANY

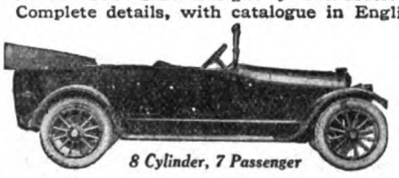
CHAPEL STREET AND LISTER AVENUE

NEW YORK NEWARK, N.J. CHICAGO

The Automobile of Today
Apperson Roadaplane

WE have one of the most interesting propositions ever placed before responsible automobile dealers throughout the world, who are in a position to represent the Apperson line of motor cars—in unoccupied territory. The Roadaplane shown here, one of our newest models, has attained a popularity unequaled by any motor car made.

Four Models—Six and Eight Cylinder Motors. $1750 to $2000—Gold. Complete details, with catalogue in English or Spanish promptly supplied upon request.



8 Cylinder, 7 Passenger

Apperson Bros. Automobile Co.
308 Main St.
Kokomo, Ind., U. S. A.
Cable Address "Jarab"

Add to Garage Profits by Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profits

PREST-O-LITE

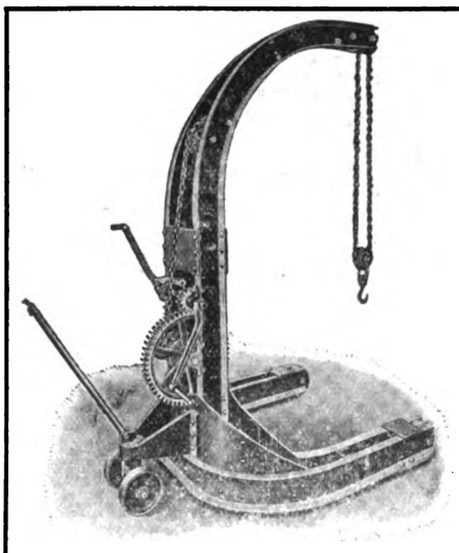
Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for $60.00. (Canada $75). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.

The Prest-O-Lite Co., Inc.
The world's Largest Makers of Dissolved Acetylene.

309 Speedway, Indianapolis, Ind.
Canadian Office and Factory, Merritton, Ontario



SAFETY FIRST

The "Lafayette" Portable Steel Crane

Made of steel—it will not break. Double locked with load. Safe. Low base. Ample power. Roller bearings. No garage or repair shop can afford to be without them. A complete hoisting and conveying machine.

STANDARD SIZES

No.	Height	Overhang	Capacity	Ht. of Base	Weight	List
6	8'-6"	3'-6"	5000 lbs.	8 inches	900 lbs.	$100.00
5	7'-6"	3'-0"	4000 lbs.	7 inches	700 lbs.	$85.00
4	6'-6"	2'-6"	3000 lbs.	6 inches	500 lbs.	$70.00

For Sale by Jobbers Everywhere or Write

The LaFayette Engineering Co., Mfgr's, LaFayette, Indiana

FEDERAL
Double-Cable-Base
TIRES

FOR

"Extra Service"

FEDERAL RUBBER CO. of Ill.
CUDAHY, WIS.

Do Business by Mail

It's profitable, with accurate lists of prospects. Our catalogue contains vital information on Mail Advertising. Also prices and quantity on 6,000 national mailing lists, 99% guaranteed. Such as:

War Material Mfrs.	Wealthy Men	Fly Paper Mfrs.
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Shoe Retailers	Doctors	Farmers
Auto Owners	Axle Grease Mfrs.	Fish Hook Mfrs.

Write for this valuable reference book. Also prices and samples of Fac-simile Letters.

Have us write or revise your Sales Letters.

Ross-Gould, 1015K Olive Street, St. Louis

ROSS-GOULD
Mailing Lists St. Louis

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The elapsed time recorder

STOP DISPUTES WITH CUSTOMERS OVER REPAIR CHARGES

Charges for repairs to be just alike to car owner and garage man should be based upon time records which are accurate—not guesses of the workman.

Make all your time records with **THE CALCULAGRAPH** and convince your customers that they don't have to pay for your workman's mistakes.

Satisfied customers soon pay for the cost of a Calculagraph and place your repair department upon a paying basis. Send for free Booklet W, illustrating a complete set of forms for a simple garage cost system.

CALCULAGRAPH COMPANY

1476 Jewelers Building **New York City**

Which Garage Man Gets the Money?

If you can repair and adjust Electrical Starting and Lighting Equipment, you will get the cream of the garage business. With the increasing demand for this sort of service, you must equip to handle the business or lose it.

Weston

Model 280

GARAGE TESTING INSTRUMENT

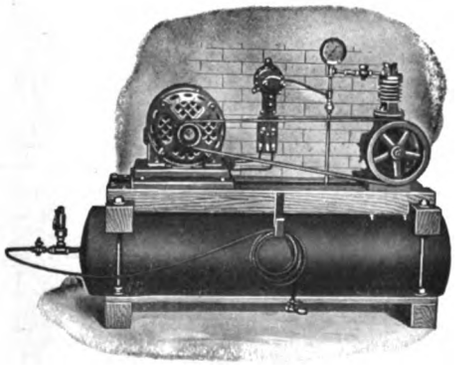
Is the best, the most reliable, and therefore the cheapest electrical equipment for you. It enables you to determine promptly and accurately the condition of the electrical equipment of any automobile, just where the trouble is, and just how to remedy it. Write for our Special Proposition.

WESTON ELECTRICAL INSTRUMENT CO., 103 Weston Ave., Newark, N. J.

23 Branch Offices in the Larger Cities

GARDNER

STATIONARY FREE AIR UNIT



FOR

SERVICE ECONOMY DEPENDABILITY

A Gardner Outfit of this type installed in *your* garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY

126 Williamson St., Quincy, Ill.

Singer Bldg New York City	Fisher Bldg Chicago	5 First St. San Francisco

GET THIS

Jenkins Vulcan Spring Co.,

1402 Chestnut Street, St. Louis, Mo.

Gentlemen:—Please send proposition on agency for VULCAN springs.

Signed_____

Address_____

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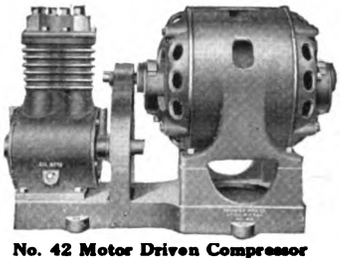
Have You A BRUNNER in Your Garage?

Mr. Garageman we believe the Brunner Air Compressor is deserving of your most careful consideration, not merely for the reason that it is the most practical and efficient Garage Air Compressor manufactured, but because it is built in a plant that was constructed for the special purpose of building Garage Air Compressors. Because it is backed by an organization whose entire time and attention has been devoted to the development and building of Garage Air Compressors for many years. Because the Brunner Air Compressor has been giving the garageman "his money's worth" and a little bit more ever since the garage business has been a business. In short the Brunner has made good.



No. 42 Motor Driven Compressor

A BRUNNER AIR COMPRESSOR IN YOUR GARAGE AND

A BRUNNER SIGN ON YOUR GARAGE would bring the trade of the Brunnerwise Motorist to your garage; he is the motorist who has learned to recognize the Brunner Sign as an unfailing sign of reliable and efficient free air service which this sign indicates. Mr. Garageman, it is a fact that Brunner Service, advertised by means of the Brunner Sign, is bringing business to the Brunner equipped garage, and if your compressed air equipment is not up to the minute it will be to your interest to

Investigate the BRUNNER Air Compressor

We will be very glad to send you our new No. 14 Catalogue, also our Garageman's Handbook on Compressed Air. You should read this book, Mr Garageman, and get facts which will aid you in selecting the right compressor for your requirements.

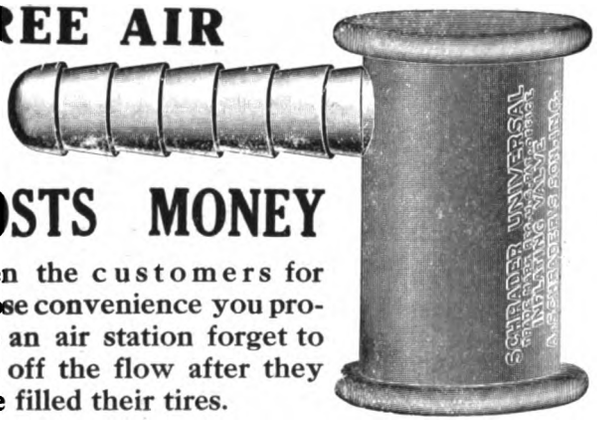
THERE IS A BRUNNER JOBBER COVERING YOUR TERRITORY. WE WILL BE GLAD TO SEND YOU HIS NAME.

BRUNNER MANUFACTURING COMPANY

Main Office and Plant: UTICA, N. Y. **Cincinnati Branch: 419 First National Bank Building, CINCINNATI, OHIO**

FREE AIR COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.



Guard against this waste by attaching a

Schrader Automatic Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from 1-4 in. to 5-8 in.

PRICE ONE DOLLAR

in U. S. A.

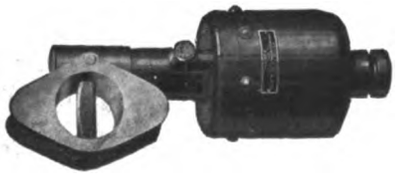
Manufactured by

A. SCHRADER'S SON, Inc.

800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

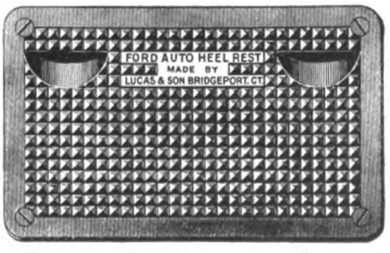
PIERCE GOVERNORS



Can be easily and quickly installed, and will provide positive and absolute speed control for any type of automobile, motor truck, tractor, marine engine, or stationary engine.

Recommended and used by all the prominent manufacturers.

PIERCE GOVERNOR CO., Anderson, Ind.



HEEL REST For FORD Cars

Size 6x7 ins., ⅛ in. thick, made of frosted aluminum, with ⅜ in. polished band. Will protect rubber mats of any Ford car. Locates heel for both clutch and brake pedals (push reverse pedal with heel, it works fine). Pyramids and raised letters cast solid—cannot flatten or wear through—cannot rust or tarnish; are easily kept clean.

Is a neat, useful foot rest—a convenience and an economy. Sold by all dealers for $1 each or sent postpaid on receipt of price.

We make the Auto Heel Rest used extensively on other cars for the same purpose.

DEALERS: Send for circular and trade discount. Made only by

BRIDGEPORT: J. L. Lucas & Son CONNECTICUT

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ESTABLISHED 1885

Chief Sentry Gasoline Pump

Keeps a double check on the gasoline you sell.

Filters and measures accurately five gallons at a stroke.

Prevents spillage and evaporation.

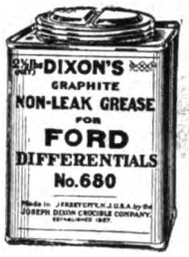
Is high speed and designed to stand the work.

KEEPS TRACK OF WHAT YOU SELL

Write for Bulletin today —NOW

S. F. Bowser & Co., Inc.
Fort Wayne, Ind.

Cut No. 102



A NEW PACKAGE!

You can now obtain from your dealer the new package of

DIXON'S GRAPHITE Automobile LUBRICANTS

Dixon's Non-Leak Grease No. 680

put up in 2½ pound cans for Ford differentials. Dixon's Non-Leak Grease No. 680 "stays put."

It is an adhesive lubricant made especially for differentials that will not retain ordinary grease.

No 680 contains the proper proportion of Dixon's selected flake graphite, that wonderful lubricant which reduces friction and the consequent wear on the moving parts of a car.

Send for Booklet 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Co.,

Established 1827

WITH PUMP AND MOTOR IN BASE
$105.00
WITHOUT PUMP AND MOTOR
$45.00

LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

FREE AIR SERVICE CURB STANDS

Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. Save Money.

LIPMAN AIR APPLIANCE CO.
199 Pleasant St., BELOIT, WIS.

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60

The Pioneer Auto-matic Gas Saver

More Mileage More Power

AEROFRAM Gas Saver

The Simplest and Most Efficient of All Gas-Saving Devices—Effects a Notable Improvement in Engine Performance—Anybody Can Install It in Ten Minutes—For All Cars.

Absolutely Automatic—Nothing to Adjust

Dealers: The Aerofram actually does the work that more expensive gas-savers claim to do. When you offer it to your customer you do so with the certainty that he cannot duplicate its efficiency with any other device at ten times the price. It will positively add two to six miles per gallon—in many cases more. Hundreds of users have testified to this. Write for details. Liberal selling terms.

Price in Canada $1.50

$1 **The Aerofram Co.** $1
107 Massachusetts Avenue. Boston, Mass.

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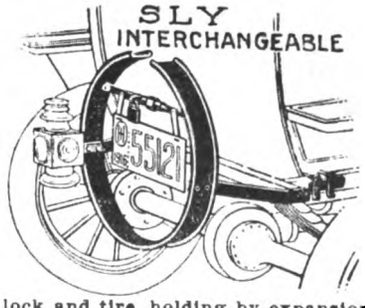
KENNEDY AUTO STORAGE COVERS

Furnish efficient and economical protection for cars in dead storage. They are made of heavy, durable paper, in standard sizes to fit any cars.

MADE ONLY BY

THE KENNEDY CAR LINER & BAG CO.
SHELBYVILLE, IND.

HESS-BRIGHT
BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
THE HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA, PENNSYLVANIA, U.S.A.



SLY Interchangeable and Cradle Type TIRE HOLDERS

Interchangeables quickly adjustable for all Ford and Chevrolet tires and demountable rims. Combines place for lamp, number plate lock and tire, holding by expansion grip on inside of tire. No chafing. Clamps to Ford or Chevrolet frame without drilling or bolting. At all jobbers, or write

New Era Spring & Specialty Co.
865-A Woodward Ave. Detroit, Mich.

THE MINIMUM IN DELIVERY COST

TON-A-FORD
(Trade Mark—Foreign Rights Reserved)

Extension Chassis, $345
F. O. B. RACINE

Combined with a Ford Chassis (new or old) makes a Powerful Ton-Truck, with Ton-and-a-Half capacity.

Dealers: Write for specifications and our agency proposition

TON-A-FORD TRUCK CO. 15th St., RACINE, WIS.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Equip Your Garage with a WhitneyHand Miller

so you won't have to turn away profitable repair business, or turn it over to the machine shops.

The Whitney will take care of any milling job in the line of auto repairs. With it you can cut gears, cams, sprockets, do key seating, straddle milling, profiling, slotting, slabbing, drilling, die sinking and countless other operations.

With this all around machine you can handle the work in your own garage. You can avoid delays; you can accommodate customers.

Simply send a postal for catalog No. 3

THE WHITNEY MFG. CO., - - Hartford, Conn.

CHAINS-KEYS-HAND MILLING MACHINES

NEW DEPARTURE BALL BEARINGS

American Made FOR American Trade

QUALITY FIRST

THE NEW DEPARTURE MANUFACTURING CO. CONRAD PATENTS LICENSEES BRISTOL, CONN., U. S. A.

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

CAUTION

Do not confuse Scaife Copper-Brazed Tanks with the cheap Welded or Soft-Soldered Tanks made by others.

We Also Manufacture

SCAIFE GASOLINE STORAGE OUTFITS

Send for Catalogues.

WM. B. SCAIFE & SONS CO.,

First National Bank Bldg. PITTSBURGH, PA.

"NORMA" BALL BEARINGS

(Patented)

The service that a car or truck is capable of rendering is limited by the endurance of its weakest part. Makers of high-grade magnetos and lighting generators are not willing that car or truck failure shall be charged against the accessories they build. Therefore, among the safeguards they provide for themselves and their customers, are "NORMA" Bearings —used almost without exception as standard equipment by makers of accessories of the better class.

Be Sure Your Electrical Accessories Are "NORMA" Equipped.

THE NORMA COMPANY OF AMERICA

1790 BROADWAY NEW YORK

(Ball, Roller, Thrust, Combination Bearings.)

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Little Giant Combination Screw Plates

Both United States and S. A. E. Standards

These assortments are particularly valuable in the automobile repair shop where a considerable amount of threading is done. Each die is contained in its own collet and is adjusted to size. There is also a Bit Brace Die Holder for cleaning up battered threads in hard-to-get-at-places.

Every need of the manufacturer, the garage and repair man, or the car owner who makes his own repairs, for tap and die assortments can be supplied from our big line.

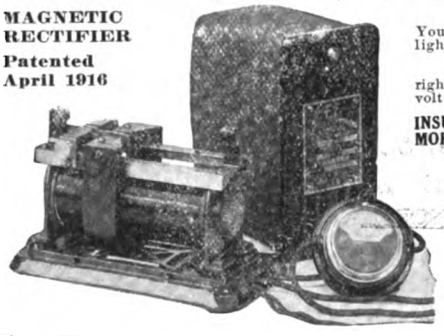
Send to-day for the circulars "Tools for the Automobile" "First aid in the up-keep of the Automobile."

Greenfield Tap and Die Corporation, Greenfield, Mass.

New York Chicago Philadelphia Galt, Ontario

F-F BATTERY BOOSTER

MAGNETIC RECTIFIER
Patented April 1916



CHARGES
Your overtasked starting and lighting storage
BATTERY
right in the car from a 110 or 220 volt 60 cycle a.c. lamp socket
INSURING A POSITIVE START MORE POWER AND BRILLIANT LIGHTS
At a minimum of trouble and expense

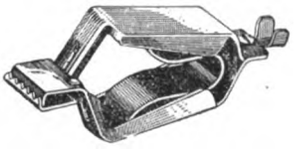
$15 Complete
f. o. b. Cleveland

Get Bulletin No. 8

THE FRANCE MANUFACTURING CO., Cleveland, Ohio
Jobbers and Dealers Throughout the United States and Canada

Time Savers

For Charging Storage Batteries



HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.

Made of steel—lead plated—may be used over and over again.

No. 21-A—1½" spread of jaws.

Sample mailed postpaid for 15c in stamps.

Single Lots, Each 20c Lots of 10, Each 15c Lots of 100, Each 12 1-2c

R. S. MUELLER & CO., 431 High Ave., S. E., Cleveland, Ohio.

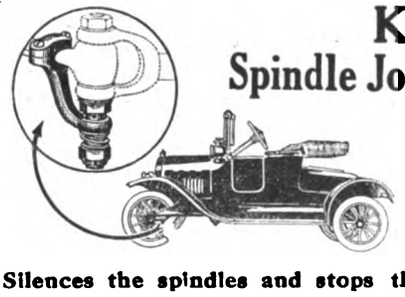
WE REPAIR

BUY, SELL AND EXCHANGE

Coils, Magnetos, Starting and Lighting Systems, High Tension Outfits and Motors

We Repair any Kind of an Electrical Heating Device

MABEY ELECTRIC & MFG. CO.
968 Fort Wayne Ave., Indianapolis, Ind.



KING
Spindle Joint Anti-Rattler
Ford Cars

$1.00 PER PAIR

Silences the spindles and stops the dangerous wear. It stops the hammering, keeps out the dirt, reduces wear and saves repair bills. It is a simple device and can be attached by any one. After that it needs no attention.

King Manufacturing Company, Inc.
305 Washington Street, Brookline, Mass.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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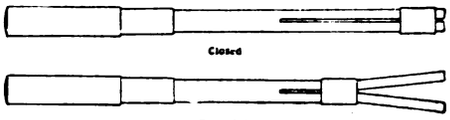
Jiffy Bushing Extractor for FORDS



(Patented)

Removes

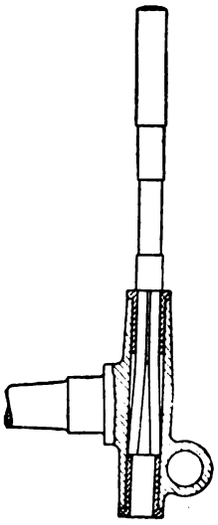
Steering Knuckle
Spindle Arm
Spindle
} BUSHINGS in a JIFFY

Made of Tool Steel and nicely finished.

Indispensable to the repairman or the owner who does his own work.

When removing Steering Knuckle Bushings it is not necessary to remove wheel.

Pays for itself in a few minutes.



Light Weight Piston for FORDS

Weight 1 Lb. Less Than Standard Ford

Manufactured to the Limit of 2 Ounces Variation in Weight

A PISTON AS FINELY MADE AS THOSE USED IN THE HIGHEST PRICE CARS

A reduction of 4 lbs. weight on reciprocating parts saves a tremendous percent of crankshaft and wrist pin bearing wear.

These pistons are cast on a moulding machine of special design insuring concentricity in casting to eliminate variable strains.

Metal is composed of elements insuring perfect bearing surfaces, toughness and durability.

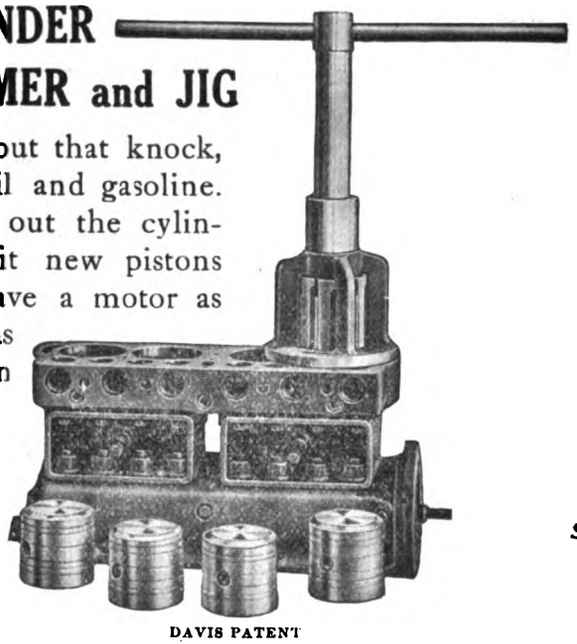
Centered on a special fixture that grips the casting on the inside walls, producing a structure of uniform thickness.

The groove that supplies oil to the wrist pin is more than ordinarily deep to prevent filling up.

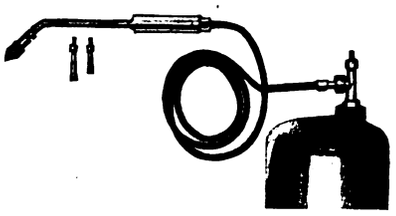
Pin bosses are drilled top and bottom for additional oiling.

CYLINDER REAMER and JIG

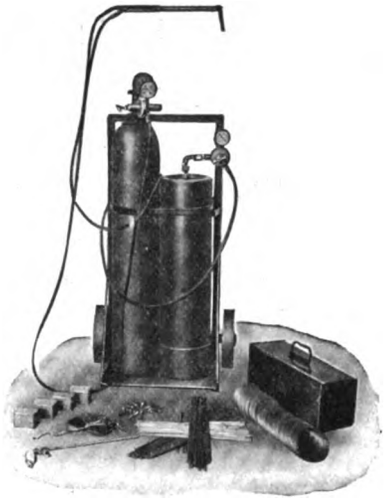
Take out that knock, save oil and gasoline. Clean out the cylinders, fit new pistons and have a motor as good as when new.



DAVIS PATENT

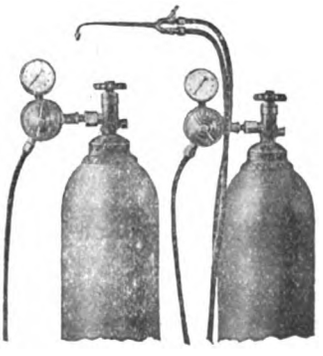


Acetylene Brazing and Soldering Outfit. One of handiest tools you could have.



Style A Welding and Carbon Removing Outfit with Truck

Oxy-Acetylene Equipment Made in Several Different Units for Welding and Steel Cutting.



Oxy-Hydrogen Lead Burning Outfit.

Recommended particularly for storage battery work.

THE G. H. DYER COMPANY, - - - Cambridge, Mass.

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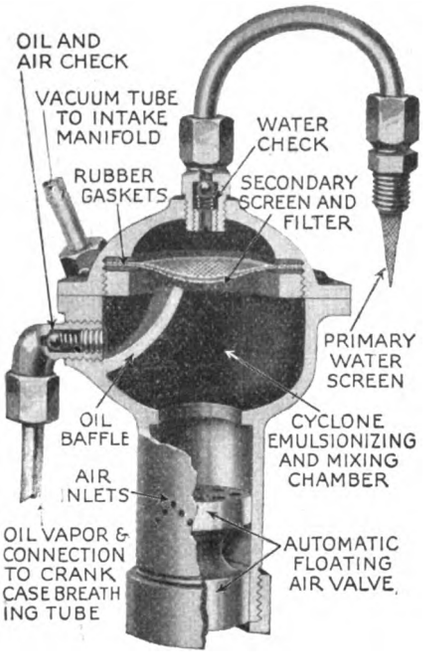
Flint Carbon Goes!

—Guaranteed—

The greatest plague in the motor world conquered for good at last.



Makes a dirty engine clean. Keeps it clean. Pos-i-tive-ly! Guaranteed!

Wilmo

Decarbonizer and Economizer

A mere handful of bronze, ingeniously constructed, which transforms any water-cooled engine into a carbon-free, more-miles-to-the-gallon producer than the car manufacturer ever dreamed of.

Banishes, forever, flint carbon which robs the car of power and miles.

Draws water vapor from return water manifold, oil vapor from crank case breathing tube and automatically regulated air through gravity plunger air valve—thence to cylinders.

The water vapor absolutely removes the hard flint carbon deposit, and positively prevents further formation. The oil vapors preserve the condition of cylinder interiors.

A clean engine always, and an average of 25% increased gasoline mileage due to these automatic features as shown by exhaustive tests.

Fits engine of any automobile, truck or tractor, water-cooled type.

Sold under the absolute money-back guarantee of the makers.

To be extensively advertised.

Interesting sales proposition awaits you.

Write today.

THE WHITTIER COMPANY

Makers of the Famous Wilmo Manifold

First National Bank Bldg., Chicago

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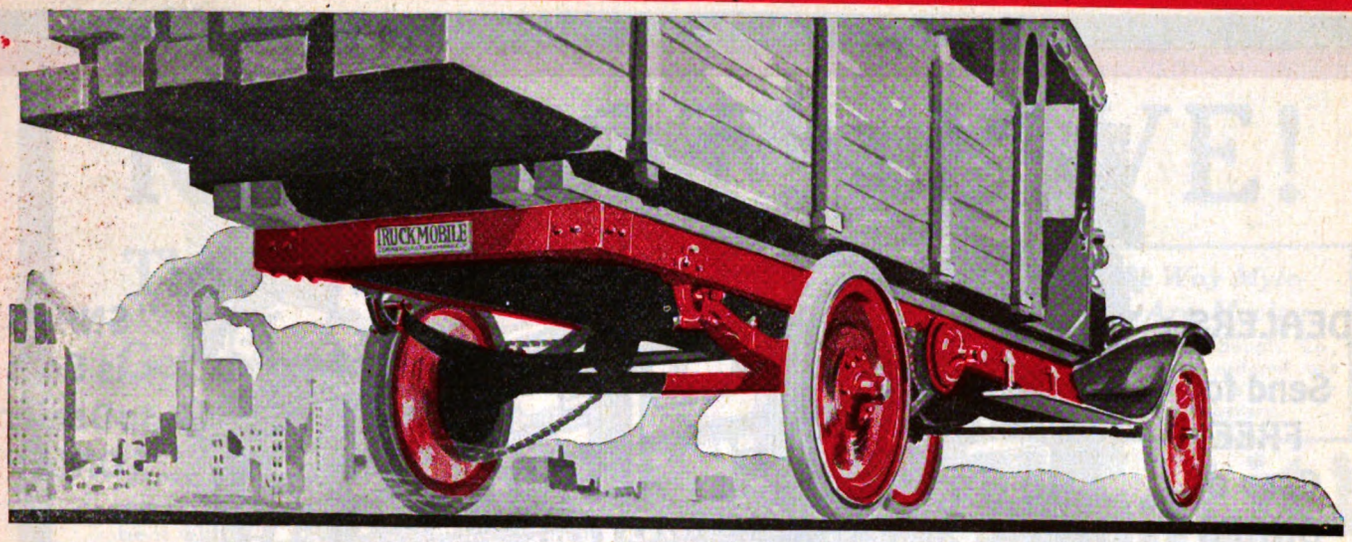


TRUCKMOBILE

A Sensational Success!

THINK of it—more than forty different makes of truck attachments were striving for dominance when the TRUCKMOBILE swung into the arena a few short months ago. Today the TRUCKMOBILE stands as a nation-wide success, enjoying a prestige both among dealers and users that puts it in a class by itself.

This shows how quickly the trade and the market recognized the ***standardization*** of the truck attachment. ***"Real truck engineering!"***—that was the instant verdict on the TRUCKMOBILE. It was seen at a glance that the TRUCKMOBILE took the truck attachment out of the makeshift class and gave it the perfection of which that wonderful idea was worthy.

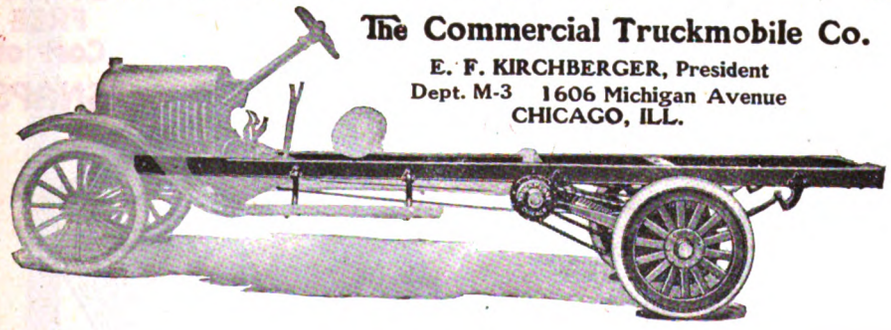
We are going to push the TRUCKMOBILE success to greater and greater bounds. Our carefully planned advertising and sales work is going to bring TRUCKMOBILE delivery and hauling into every community.

The biggest dealers in the country are taking on the TRUCKMOBILE. We allow only one dealer in a territory to handle the TRUCKMOBILE, and you may rest assured that everybody in that territory has heard about him. If you have not heard of a dealer in your territory write at once for our proposition.

Biggest of Them All!

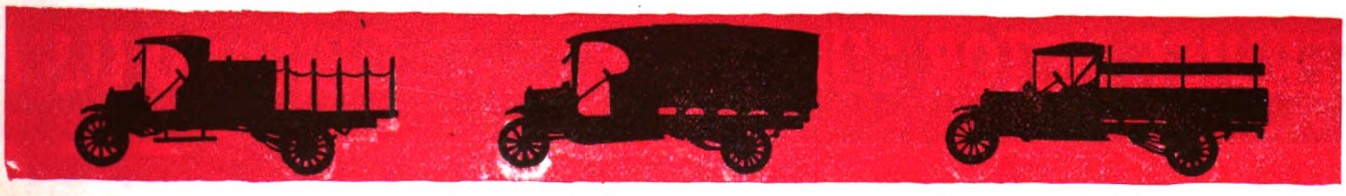
1. The TRUCKMOBILE has a longer wheel base—133 inches.
2. The TRUCKMOBILE rides easier under light as well as heavy loads, due to spring construction and long wheel base.
3. Less side sway to frame and body on TRUCKMOBILE—due to method of spring attachment.
4. Wider frame—41½ inches.
5. More massive construction.
6. Fewer parts.
7. Bell sprocket that can be attached in few moments—***keys onto jackshaft.***
8. Requires less time of dealer for making attachment to Ford chassis.
9. Load strain on axle properly distributed because side springs are nearer wheel center than on others.
10. Destroys none of the used or unused parts of Ford car.

The Commercial Truckmobile Co.
E. F. KIRCHBERGER, President
Dept. M-3 1606 Michigan Avenue
CHICAGO, ILL.



$350

And a Ford Chassis
(Old or New)



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DEALERS:

Send for FREE Copy of "SNAPS"

We Occupy this Entire Building—Finest and Handsomest Structure in the United States Devoted Exclusively to Wholesale Auto Supplies and Hardware

"SNAPS" is Sent to Dealers ONLY!

Through Service We Succeed!

We are the fastest growing wholesale automobile accessory jobbing house in America—30,000 dealers know us favorably through having done business with us.

We were the first to inaugurate, and practice, on a national scale, our system of selling to merchants from our monthly catalog "SNAPS" known all over the country as *"The National Bargain Directory of Automobile Supplies."* Our system enables us to place before the accessory dealers of this country a *new, fresh assortment of choice merchandise every 30 days.*

By mailing a complete catalog monthly, we keep the dealer in touch with the *latest* and *best* that the market affords. We do not have to anticipate a rise in prices in quoting you, and therefore, you have the advantage of the *lowest prices current* at any time.

We *buy* for cash and we *sell* for cash—therefore we are able, and do give you, the full benefit of the *lowest prices* at which our quality of goods can be bought. We are selling millions of dollars worth of auto supplies and hardware per year—therefore we can afford to take a very small profit on each item—*the big volume makes this possible.*

This business was founded with a small capital and a big idea—the idea of *SERVICE.* We have taken the meaning of *SERVICE* in its broadest sense. And each day, each month we have found a new and still broader meaning. And now we understand that *SERVICE* means all things that go to make life easier and business *more profitable for the dealers we serve.*

We guarantee to ship 90% of our orders within six hours from receipt. Only orders for unusual special items are occasionally held longer. *We guarantee to return your money to you at any time* that you ask for it—and it makes no difference whether you want it back for a good reason—or for no reason at all.

WE SELL WHOLESALE ONLY!

We only accept and fill orders from qualified dealers and garage men who buy to resell. No consumer order ever gets by our "Turn Down" department. We will not compete against our own customers and therefore *we protect the dealer absolutely.* From thousands of dealers we have earned the title of being their "Chicago Partner"—why don't you, too, send for a free copy of "SNAPS" the *National Bargain Directory of Auto Supplies?* Be sure to use your letterhead so that we may know you are a dealer and entitled to "SNAPS."

LET US BE YOUR "CHICAGO PARTNER"

Send for FREE Copy of "SNAPS"

SERVICE MOTOR SUPPLY Co. 1523 25 27 29 31 Michigan Blvd CHICAGO, U.S.A.

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RED HOT! LIVE!

That's What Dealers Say

Get in on this:

Every now and then a real live accessory comes along. One that stands out like a seven-foot giant among a crowd of five-footers. The Myle-Mayker is just that kind of a seller. Not one of those "May-be-it-will-sell" accessories with which the market is flooded, but one with A TRIED AND PROVED SALES RECORD. It ***has sold.*** 67,500 sold in the first ninety days! Those ninety days just preceding cold weather. It ***stayed sold,*** too. It is easier to sell now than last fall. The big advertising we did, the record of success back of it, the host of satisfied users—makes the Myle-Mayker a certainty for you. Chance is eliminated. Get it and you'll sure make a big clean-up selling it.

Saturday Evening Post Advertising; Also Direct to Ford Owners Campaign in Your Neighborhood

The advertising we did last fall won't hold a candle to our new campaign. National advertising, Motor Journal advertising, Newspaper advertising, ***live selling helps for you.*** Then ***on top*** of all this a DIRECT-TO-FORD-OWNER MAIL CAMPAIGN WILL GO TO THE FORDERS OF YOUR NEIGHBORHOOD **OVER YOUR NAME.** ***Straight*** to your customers and those you want as customers.

This advertising sizzles with live, red-blooded, forceful copy and good pictures. It's advertising that ***compels*** attention. Goes straight to people who are interested. Goes to the people you want to reach. Tells them YOU are the live dealer handling the Myle-Mayker. MEANS BIG SALES FOR YOU.

The Advertising Is Starting—Order NOW!

Sales are ***waiting*** for you on the Myle-Mayker—so—***right now*** send for a sample. There is a handsome profit in every sale. No adjustments to make—it's a CLEAN profit.

Order yours. Use the coupon. Pin to your letterhead or business stationery. Every day you delay will lose dollars for you.

MyleMayker Co.

Dept. C3, 56 East Randolph Street, Chicago, Ill.

Here's the Way Myle-Maykers Are Moving

The Auto Tire & Supply Co., Wichita, Kans., have ordered out over *700* Myle-Maykers in forty days of January and February.

ADVANCE

CORK INSERT

FORD TRANSMISSION LININGS

Outlasts 3 sets of ordinary linings. Has given 50,000 miles service on a Ford jitney. Puts permanent grip in Ford transmissions. Stops the jerking and clatter, the mechanism-killing vibration. Write for particulars.

Myle-Mayker Co.
Dept. C3
56 East Randolph Street
Chicago, Ill.

Please send me one Myle-Mayker, which I want to test out with the idea of ordering a dozen or more if satisfactory. Enclosed is $3.50 (regular dealer's price). I agree not to sell at less than $5.00 retail.

Name .....

R. F. D. or Street No. .....

P. O. .....

State .....

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The Unanimous Choice of 73 Leading Manufacturers!

This test was an exhaustive one and open to all makers of Spark Plugs. AC won over all.

Look for the AC burnt into the porcelain.

They deliver the vital spark whether the car is traveling 1 mile or 100 miles per hour.

AC Spark Plugs are Regular Equipment on all the high class cars and trucks shown in the list printed in white on the big AC.

Cadillac
Pierce-Arrow
Packard Hudson
Marmon Chalmers
Hupmobile Chandler
Haynes Dort Chevrolet
Cole Reo Davis Daniels
Paige Pilot Anderson
Peerless Scripps-Booth
Abbott McFarlan
Pathfinder White Murray
Delco-Light Bour-Davis
Stearns-Knight Paterson Monroe Phianna
Stutz Velie Lexington-Howard Westcott
National Detroiter
Apperson McLaughlin (Canada)
Jackson Dodge Bros
Saxon Stephens

Buick Oakland
Oldsmobile Jeffery KisselKar
Premier Knox Jordan Liberty
Crane-Simplex Singer
American-LaFrance
Fostoria Federal
Sandow Truck
Signal Truck
Sterling Truck
Republic Truck
Gabriel Truck
Moreland Truck
Netco Truck
Wilcox Trux
Diamond T Truck
Brockway Truck G.M.C.
Gramm-Bernstein Truck Lincoln Truck
Four Wheel Drive Acme Truck
Samson Tractor

MR. DEALER: You cannot afford to recommend an article unless its quality will back your statements.

The Standard Spark Plug of America

The master mechanics of these cars have experimented for you. *They know.* Follow their lead if *your* car is not AC equipped.

Champion Ignition Co.

Sole Manufacturers

Flint, Michigan, U. S. A.

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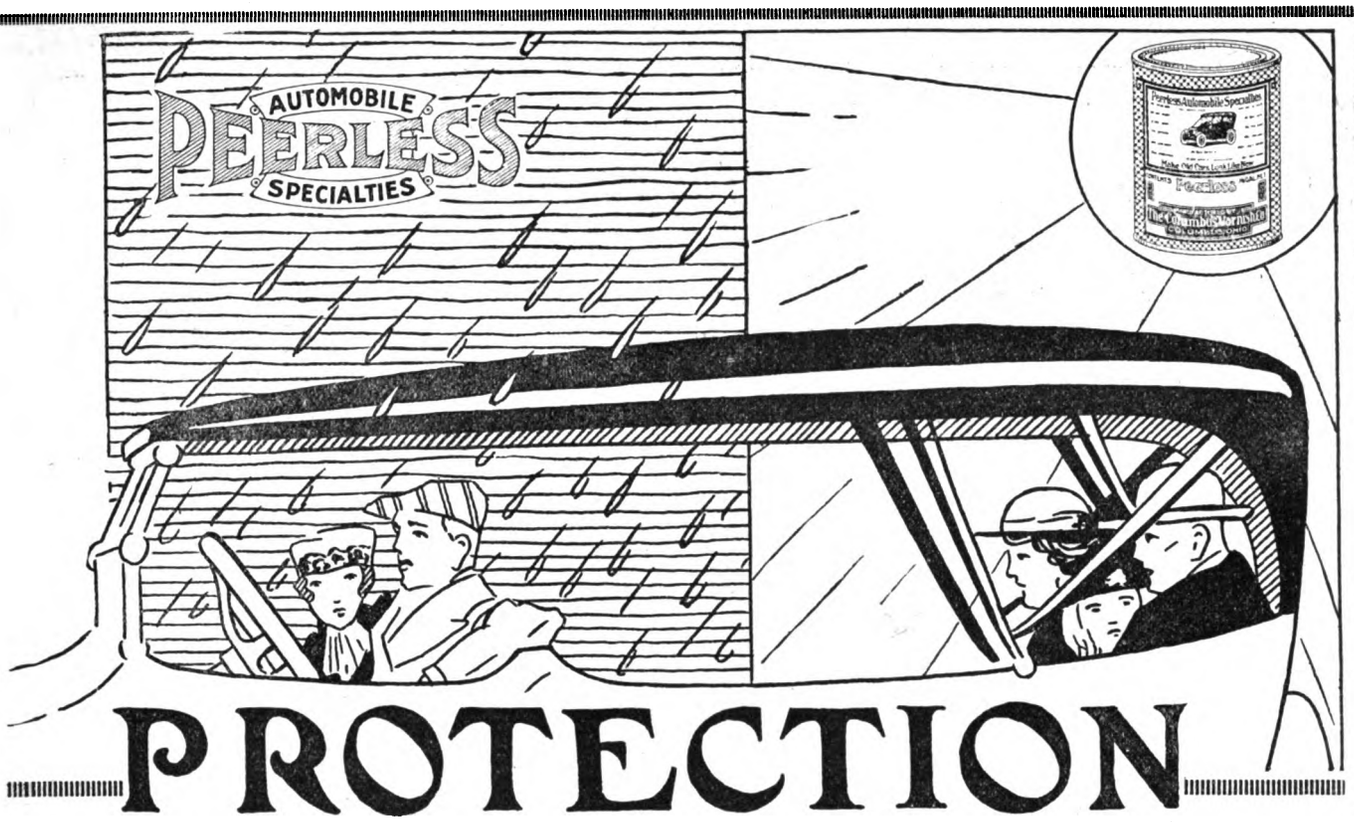

PROTECTION

IN ALL KINDS OF WEATHER

SPRING——SUMMER——FALL——WINTER

Use

Peerless Mohair Top Dressing [To Renew and Waterproof Mohair Tops]
Peerless Leather Top Dressing [To Preserve and Renew Rubber, Leather and Pantasote Tops]
Peerless Lining Dye [To Dye Faded, Stained and Grease Spotted Linings of Tops]

MAKE OLD CARS LOOK LIKE NEW

Peerless Automobile Specialties

Used and endorsed by over ***8000 Automobile Painters*** and ***Hundreds of Thousands*** of cans sold to pleased car owners

Peerless Specialties are Top Dressings, Lining Dyes, Cushion Dressings, Lamp Enamels, Cylinder Enamels, Body Polishes, Varnish Renewers, Battery Box Enamels, Fender Enamels, Rim Paint, Tire Paint, Orange Shellac, Owner's Painting Outfit, and Color Finishes in the 6 colors of Red, Gray, Green, Blue, Yellow and Black. *All Peerless Quality.*

Peerless Specialties Are Sold by

ACCESSORY JOBBERS — DEALERS — GARAGES — HARDWARE JOBBERS AND DEALERS.

Used by Automobile Painters, Owners, Chauffeurs and Garage Men.

Dealers' Helps for 1917

New Window Display Material Ready April 1st includes Hangers, Two Kinds of Signs, Streamers showing uses of the goods. All in colors. New business producing inslips for your mail. Mailing cards, etc. Write for our latest circular showing some advertising that car owners will see and make them ask for Peerless goods. Be sure you have our 1917 Catalogue.

Made Only by ***The Columbus Varnish Co.,*** *Makers for 25 years of Quality Varnish* ***Columbus, O.***

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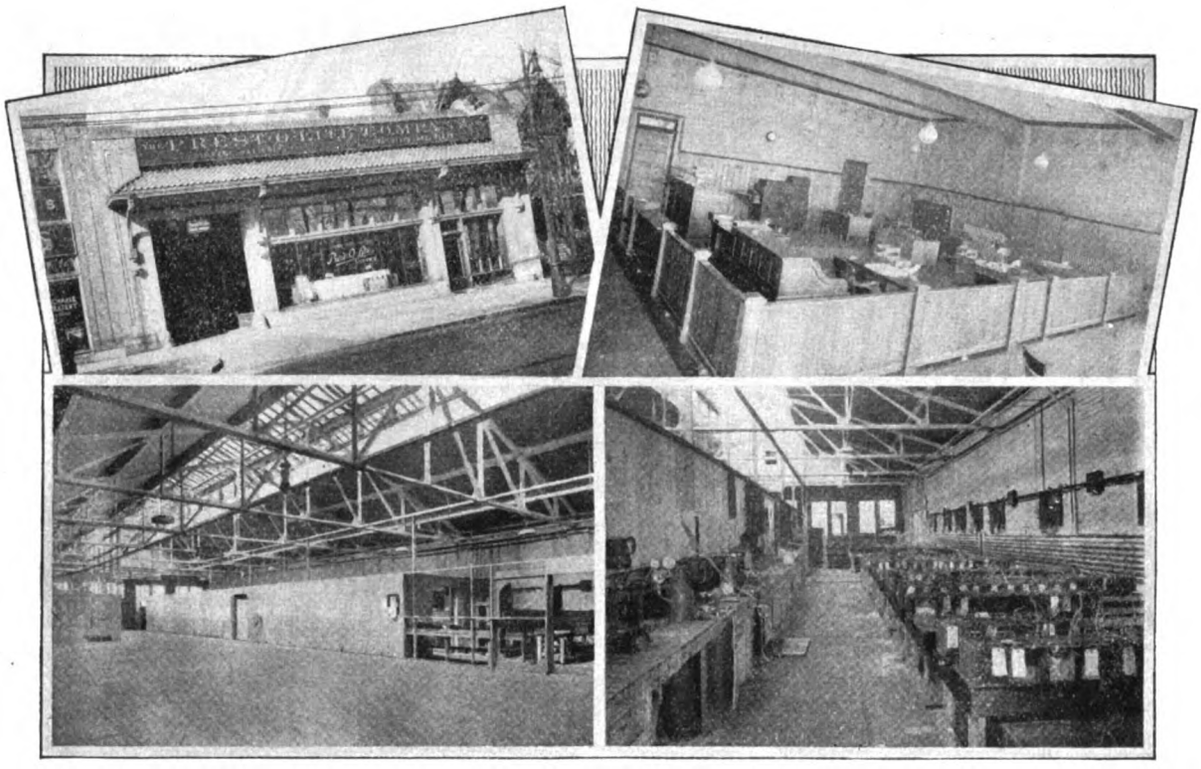
Prest-O-Lite SERVICE in DETROIT



Illustrations above show, (top) front view of Prest-O-Lite Factory Branch at 1239 Woodward Ave., Detroit; (below) the large space devoted to battery inspection and service.

Views above show, (top) commodious office space of the Detroit Branch; (below) large quarters occupied by the battery charging and repair department.

IN Detroit, fifth city of America, the automobile metropolis of the world, where the influence of the motor car is far-reaching and SERVICE is a paramount issue—there you will find a big Prest-O-Lite Factory Branch, with a live, hustling organization giving real *factory* service to manufacturers, dealers and car owners in Detroit and Eastern Michigan.

Detroit is but one link in the great chain of Prest-O-Lite Direct Factory Branches and Service Stations. The Prest-O-Lite network of service literally covers the country, insuring full satisfaction and hearty co-operation to owners, dealers and manufacturers in the use of Prest-O-Lite products.

Thousands of dealers are finding the Prest-O-Lite Battery proposition a source of substantial profit. Write today for details.

The Prest-O-Lite Co., Inc., U. S. Main Office and Factory 309 Speedway, Indianapolis, Indiana
Canadian Main Office and Factory, Merritton, Ontario, Canada

The Prest-O-Lite battery is a better battery--backed by a better service

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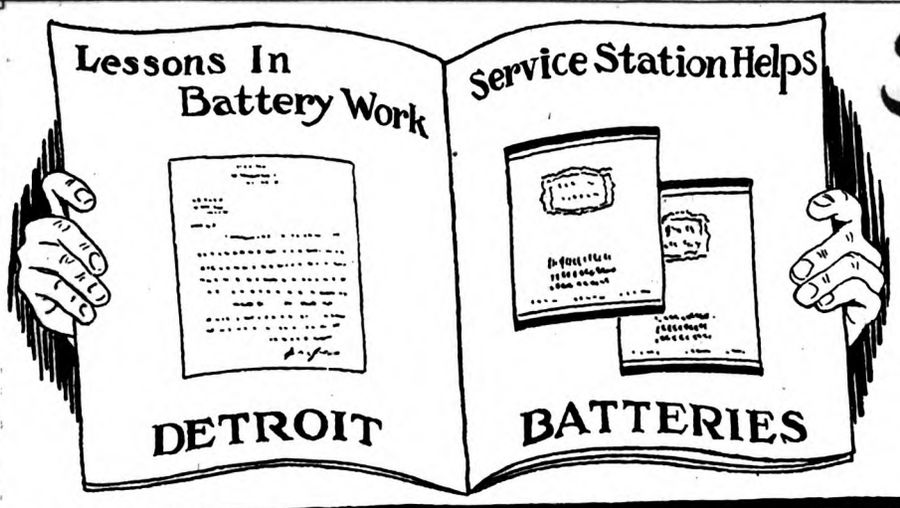


This Free Portfolio will lead to this

DO YOU realize that there are just two things on a motor car that wear out and must be replaced time and time again—tires and batteries. These are the only two accessories which insure a steady, permanent, resale business for the dealer who handles them.

The dealer who enters the battery business today, steps in just at the beginning of the greatest growth. The business will be trebled within the next three years.

This portfolio will explain how easily the Detroit Battery Company has made entering the battery business for the dealer who can measure up to their standards.

This portfolio will show you how we have taken all the mystery out of the business—how we even give a free course of instruction in practical battery work to our own service station men—how we help them get business—show them how to advertise and how to treat their customers. The portfolio shows actual samples of the various service station helps—literature, signs, etc. It shows the office system which we have devised for our service stations.

And it will also contain a personally dictated proposition, showing you just what it will cost you to get into the battery business, what equipment is required—what our proposition to you would be and the probable profits you could expect in your particular territory.

And it will describe Detroit Batteries, which will be the foundation and a mighty safe sound foundation for the business. It will show how they have been made the longest lived, most powerful batteries on the market.

As a wide awake dealer you ought to know the possibilities in the battery business.

You ought to have this portfolio right now.

It won't cost you a cent. Just fill out this coupon and mail it today.

DETROIT BATTERIES

Detroit Battery Company

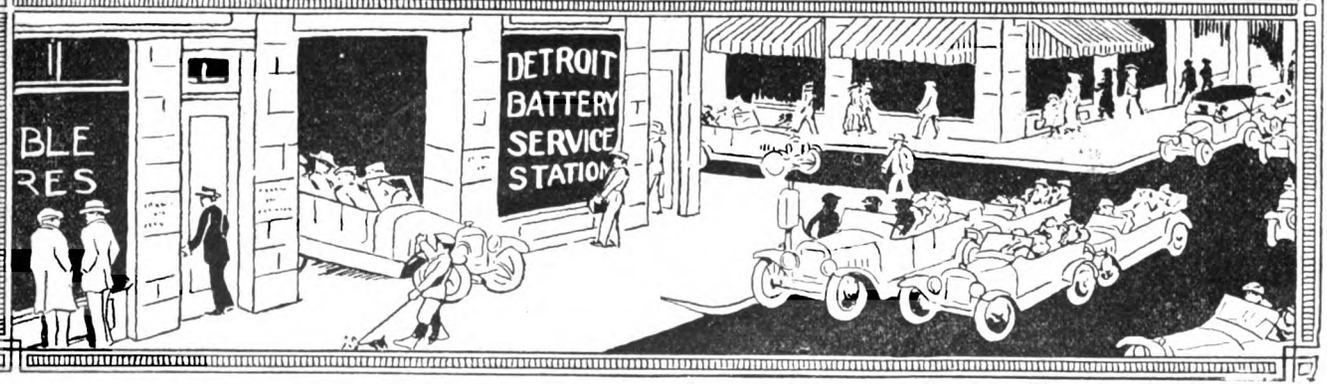
110 E. High St., DETROIT, MICH.

Detroit Battery Co.
110 E. High Street
Detroit, Michigan.

Send me the Portfolio.

Name .....

Address .....



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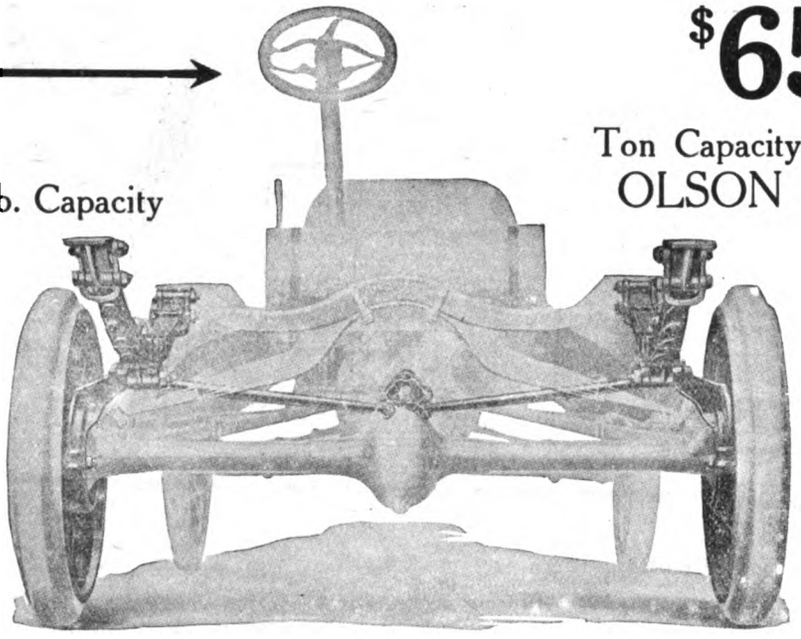
$30 → 1000 to 1500 lb. Capacity

$65 Ton Capacity Without OLSON Brake

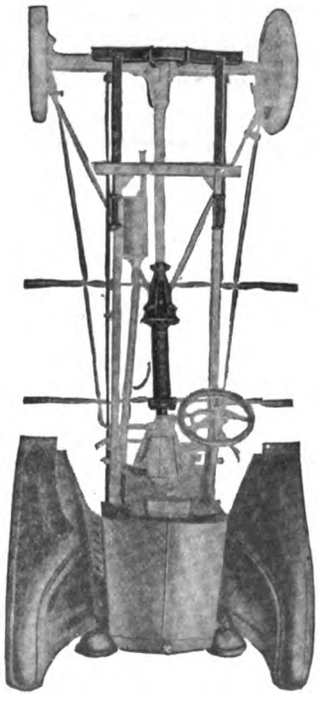


$50 24 or 30 Inch Extension

$90 Ton Capacity With OLSON Brake

You Don't Need To Oversell With The OLSON Unit For Fords

OLSON Extension—
24 or 30 Inch



Price $50

OLSON Dealers alone have the advantage of selling prospects a Unit of the capacity they need—without charging a big excess price for useless capacity. Dealers with a 1-ton unit and no other, must sell the man who needs but 1000-lbs. capacity, twice what he needs. And having bought—if he does buy—at a price way above necessity, he has to pay again in running expense for the dead load of an underfilled truck.

OLSON Units fit prospects' needs. **$30** for a 1000 to 1500-lb. capacity OLSON Unit is salable to thousands who won't spend $350 for a ton-capacity unit.

And $90 for the heaviest OLSON Unit—with **special brakes like those on standard trucks**—puts enough money back in the buyer's pockets to clinch business where others fail.

1000 sets of OLSON Units **a day insure immediate delivery.** National advertising and more than 50,000 Units in service create a selling demand that pays.

Write for complete details, and liberal offer to dealers, **for profits.**

SWEDISH CRUCIBLE STEEL CO.

Factories
Detroit, Mich. Windsor, Ont., Can.
Chicago Branch 1344 Michigan Ave.
Address Wheel Department.

5 Leaves for 1000 lb. Loads, $30

7 Leaves for 1500 lb. Loads, $30

$65

Ton Capacity Without Brake

$90

Ton Capacity With Brake

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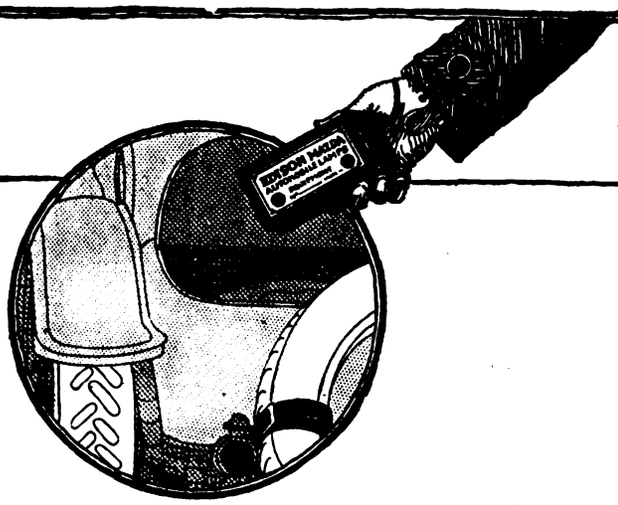


You carry an extra Tire, Why not extra Lamps?

Ask *your* customer that question—*"Why not extra Lamps"*—and your profit on a complete set of spare lamps is pretty well assured.

He carries spare tires as a matter of course; he carries an extra spark plug and other spare parts to provide against any number of possible emergencies.

But what about his lamps?—Why not extras?

It's just simple logic—and good judgment—for him to carry a complete spare set of

EDISON MAZDA Automobile Lamps

To make your sale of *Edison Mazdas* easy and certain we supply you three mighty valuable and effective helps:—

First—Our new indexed booklet, from which even an inexperienced clerk can tell at a glance the correct bulbs for *any* socket in *any* car—no matter what make or model.

Second—Our special EDISON MAZDA Auto Lamp chests, in which you pack the proper bulbs. Customers like this handy, compact chest because it's convenient, and the lamps can't break. He can just chuck it into his tool box and forget the lamps till he wants them.

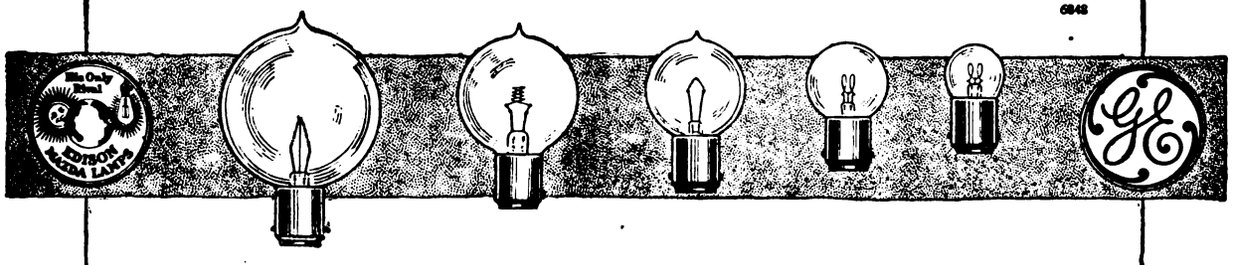
Third—Our complete counter assortment which displays attractively, and contains the *correct* lamps for every socket and practically every car made. The initial investment in this splendid sales-aid is slight—and our scheme for the re-ordering to keep the stock complete is almost automatic.

Write us today for our unusually attractive—profitable dealer proposition.

Be the *first* in your district *this Spring.*

EDISON LAMP WORKS, of General Electric Company, HARRISON, N. J.

6948



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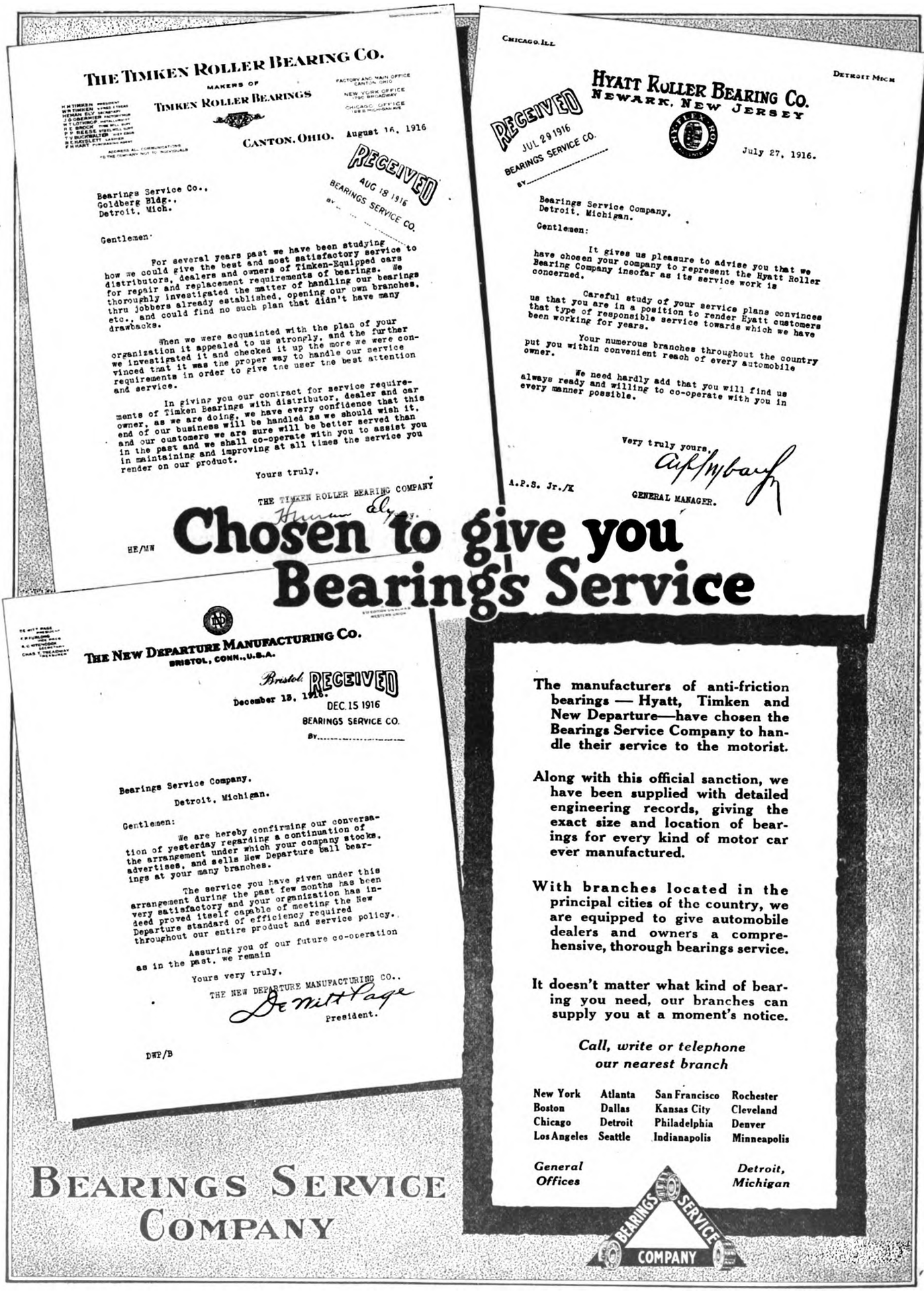

THE TIMKEN ROLLER BEARING CO.
MAKERS OF
TIMKEN ROLLER BEARINGS
CANTON, OHIO. August 16, 1916
RECEIVED AUG 18 1916 BEARINGS SERVICE CO.
Bearings Service Co.,
Goldberg Bldg.,
Detroit, Mich.
Gentlemen:
For several years past we have been studying how we could give the best and most satisfactory service to distributors, dealers and owners of Timken-Equipped cars for repair and replacement requirements of bearings. We thoroughly investigated the matter of handling our bearings thru jobbers already established, opening our own branches, etc., and could find no such plan that didn't have many drawbacks.
When we were acquainted with the plan of your organization it appealed to us strongly, and the further we investigated it and checked it up the more we were convinced that it was the proper way to handle our service requirements in order to give the user the best attention and service.
In giving you our contract for service requirements of Timken Bearings with distributor, dealer and car owner, as we are doing, we have every confidence that this end of our business will be handled as we should wish it, and our customers we are sure will be better served than in the past and we shall co-operate with you to assist you in maintaining and improving at all times the service you render on our product.
Yours truly,
THE TIMKEN ROLLER BEARING COMPANY
HE/MW

CHICAGO, ILL. DETROIT MICH
HYATT ROLLER BEARING CO.
NEWARK, NEW JERSEY
RECEIVED JUL 29 1916 BEARINGS SERVICE CO.
July 27, 1916.
Bearings Service Company,
Detroit, Michigan.
Gentlemen:
It gives us pleasure to advise you that we have chosen your company to represent the Hyatt Roller Bearing Company insofar as its service work is concerned.
Careful study of your service plans convinces us that you are in a position to render Hyatt customers that type of responsible service towards which we have been working for years.
Your numerous branches throughout the country put you within convenient reach of every automobile owner.
We need hardly add that you will find us always ready and willing to co-operate with you in every manner possible.
Very truly yours,
A.P.S. Jr./K
GENERAL MANAGER.

THE NEW DEPARTURE MANUFACTURING CO.
BRISTOL, CONN., U.S.A.
Bristol, December 15, 1916. RECEIVED DEC. 15 1916 BEARINGS SERVICE CO.
Bearings Service Company,
Detroit, Michigan.
Gentlemen:
We are hereby confirming our conversation of yesterday regarding a continuation of the arrangement under which your company stocks, advertises, and sells New Departure ball bearings at your many branches.
The service you have given under this arrangement during the past few months has been very satisfactory and your organization has indeed proved itself capable of meeting the New Departure standard of efficiency required throughout our entire product and service policy.
Assuring you of our future co-operation as in the past, we remain
Yours very truly,
THE NEW DEPARTURE MANUFACTURING CO.,
President.
DWP/B

Chosen to give you Bearings Service

The manufacturers of anti-friction bearings — Hyatt, Timken and New Departure—have chosen the Bearings Service Company to handle their service to the motorist.

Along with this official sanction, we have been supplied with detailed engineering records, giving the exact size and location of bearings for every kind of motor car ever manufactured.

With branches located in the principal cities of the country, we are equipped to give automobile dealers and owners a comprehensive, thorough bearings service.

It doesn't matter what kind of bearing you need, our branches can supply you at a moment's notice.

Call, write or telephone our nearest branch

New York	Atlanta	San Francisco	Rochester
Boston	Dallas	Kansas City	Cleveland
Chicago	Detroit	Philadelphia	Denver
Los Angeles	Seattle	Indianapolis	Minneapolis

General Offices *Detroit, Michigan*

BEARINGS SERVICE COMPANY

BEARINGS SERVICE COMPANY

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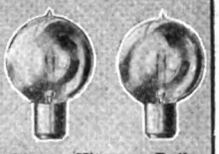
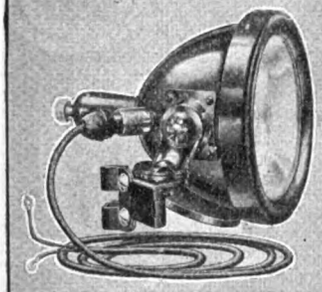
Our Reputation is *Your* Guarantee

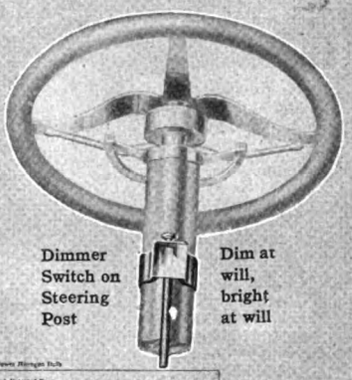
VERSAL PRODUCTS
FOR THE
UNIVERSAL CAR
DETROIT STARTER COMPANY
DETROIT, U.S.A.

Electric Tail Lamp

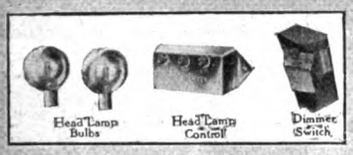

Extra 24 c. p. Nitrogen Bulbs

Head Lamp Control


Spotlight


Dimmer Switch on Steering Post

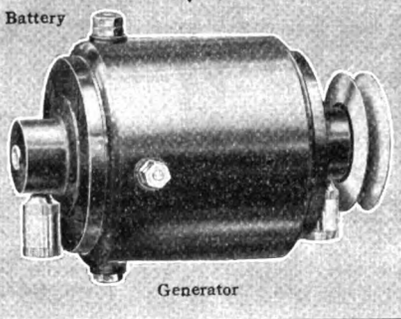
Dim at will, bright at will

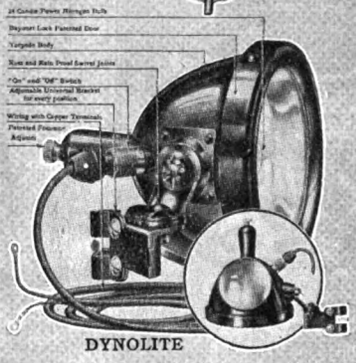


Storage Battery

Regulator

Electric Side Lamps


Generator


DYNOLITE
The Perfect Ford Spotlight

Genolite Type C and D ▽ Constolite — Dynolite

Genolite *Type "C"* $29.85

An improved electric lighting system for lighting all five lamps, heads, sides and tail — gives brilliant light from storage battery in both side and tail lamps (which we furnish) irrespective of whether motor is running or idle. Provides also two nitrogen head-light bulbs lighted through patented regulating device which governs flow of current taken from magneto, giving more constant light at low engine speeds and can be dimmed at will at high speeds. Installed in two hours.

Genolite *Type "D"* $31.85

Includes the following — a storage battery — a generator with "cut out" which automatically charges the battery — two beautiful side lamps with bulbs — one high grade tail lamp with bulb — one high grade windshield spotlight with bulb — one coil box for automatically regulating spotlight — which also automatically dims headlight. Together with necessary wires, brackets — absolutely complete, ready for installation. No extras needed. Installed in two hours.

Dynolite $6.85

A powerful windshield spotlight designed exclusively for Ford cars. Cannot be excelled for the quality of material throughout, its many exclusive features and the exceptional power and brilliancy of its light. Operates off magneto through patented regulator which automatically delivers current at the proper voltage, keeping light constant in power irrespective of motor speed. Only two terminal connections to make installation.

Constolite $4.85

Gives a full driving light at practically all speeds — light in both head lamps at all times. Wired in multiple to prevent burning out — dimmer switch conveniently located on steering post — an exclusive feature found in no other device control. All wires, two extra bulbs, and dimmer switch provided. Installed in few minutes

DEALERS! This is the greatest sales producing accessory of the year. Write for particulars. Dept. G

Perfect Electric Lighting *for* Ford Cars

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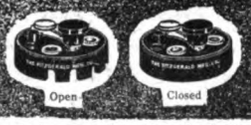
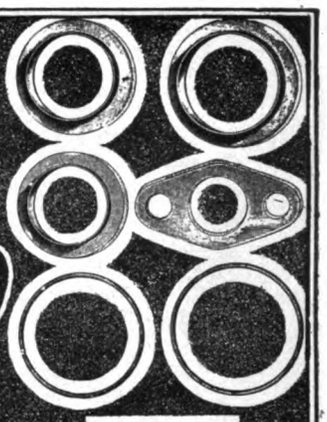
Liners—Shims



Two Point Hard Rubber Switches

Clero Hand Horn

Clero Electric Push Buttons


Cadillac Gaskets

FITZGERALD MFG. CO.

Never-Leak

COPPER-ASBESTOS

GASKETS

Perfection Snap Cable Terminal

Standard "Lug" Type Terminals

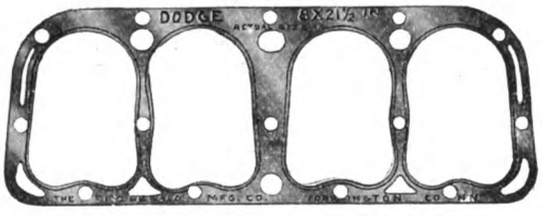
Standard Battery Con.

Perfection Spring Battery Con.

Clero Electric Push Buttons

Shim Stock

There's as much need for quality in a gasket as in any mechanism of the machine you use, and this applies to material and to shapes that fit. We use stock that is highest grade, and produce gaskets suited for every practical need with automobile vehicles. We've specialized gaskets just as we have a very wide range of sheet metal products, and today are producing cylinder block gaskets for



FORD	VIM	DODGE
OAKLAND	ENGER	MONROE
CHEVROLET	MAXWELL	(75) OVERLAND (83)

Standard French Type Gaskets

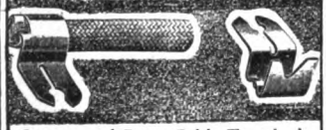
Steering Post Attachments

Ford Lighting Outfits

Ford Ignition Assembly

Spark Plug Gaskets Carried in Stock

Standard Closed Type Gasket


Copper and Brass Cable Terminals

There's no economy in using makeshifts. The best results are obtained from the specialty. We can supply anything in gaskets, and cheaper than they can be obtained elsewhere. We are the largest manufacturer in the industry and we have attained this position by quality of products and reasonable prices.

We can make deliveries to schedule.

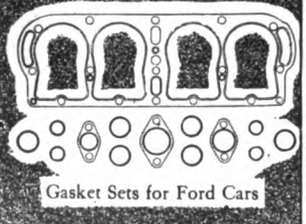
We manufacture and can quote you the best prices of the industry for the same qualities.

Catalogue and Price Lists Supplied at Request.

Standard Flange Fittings

FITZGERALD MFG. CO.,

TORRINGTON, CONNECTICUT


Gasket Sets for Ford Cars

Overland Gaskets

Flange Exhaust Gaskets

Slip Snap Terminals

Copper-Asbestos Gaskets

Slip Snap Terminals

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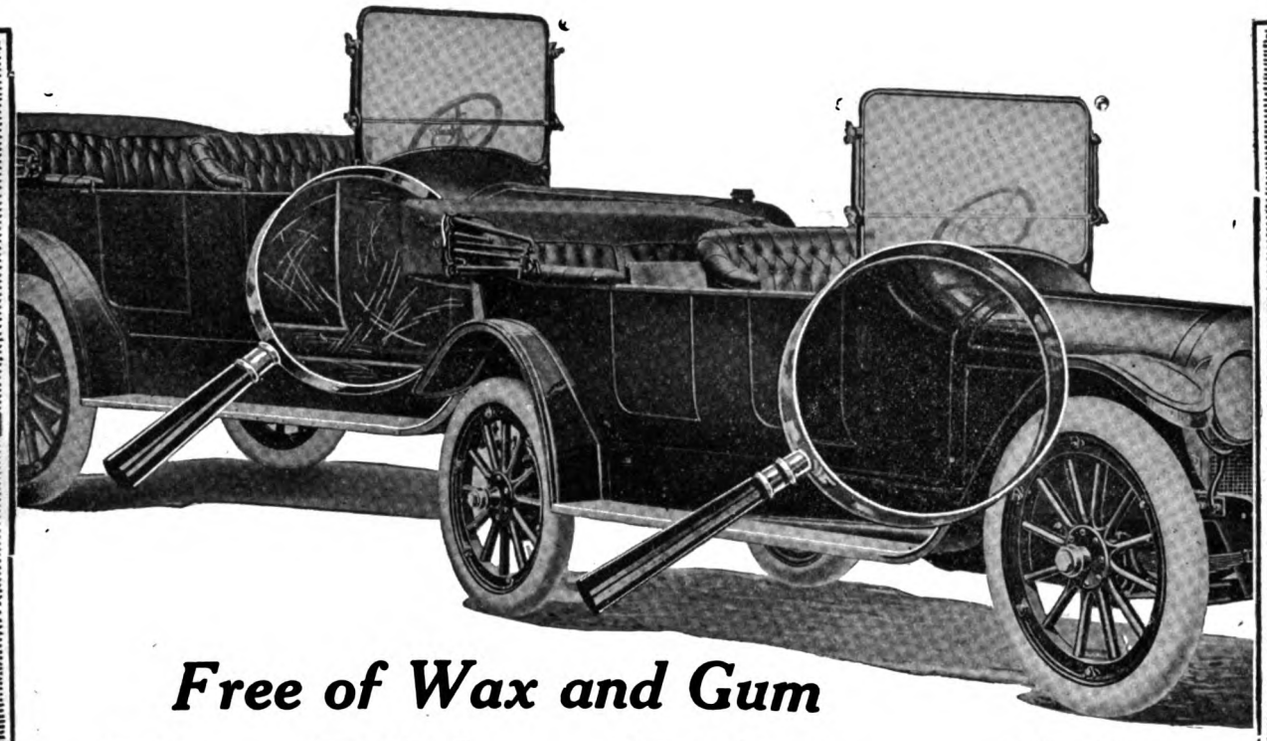

Free of Wax and Gum

Blue Ribbon Polish

Is a standard product. Its superior quality is known of by automobile owners the country over. Being free of wax or gum it cannot coat the finish of a car nor retain grit or other abrasives that would destroy appearance. It penetrates and revives the finish, restoring its lustre, and it cleanses and polishes with the one operation.

It's an ideal compound. The results are certain. Other polishes may be destructive and quality is questionable until it has been proven by long service experience.

The cost of material, production and overhead have increased through the year. The quality, price and discounts to the trade of all Blue Ribbon products are unchanged. The profits are positive. Blue Ribbon products cost no more than stock that is inferior and unknown.

Those who sell Blue Ribbon products benefit directly through our high quality and low prices. Being prepared in sealed containers and fully guaranteed the jobber, dealer and consumer are absolutely protected. When you stock Blue Ribbon products you can supply any demand.

This entails a very moderate investment. There is constant sale and satisfied customers will increase your business.

Have you listed Blue Ribbon products in your 1917 catalog?
If you do not know all about these specialties, write us today

Blue Ribbon Specialties

- **Blue Ribbon Cream Metal Polish** For any metal.
- **Blue Ribbon Black Enamel** For Lamps, Hoods, Radiators and metal parts.
- **Blue Ribbon Leak Proof Cement** A Permanent Radiator Cement.
- **Blue Ribbon Cold Cream Hand Soap** Contains no pumice or sand.
- **Blue Ribbon Auto Body Gloss** For Automobiles and Furniture.
- **Blue Ribbon Nickel Polish** For Nickel Parts and Trimmings.
- **Blue Ribbon Auto Top and Seat Dressing** A Waterproof Dressing that restores Tops and Seats.
- **Blue Ribbon Oil Soap** A pure Vegetable Oil Soap for any purpose.

INTERNATIONAL METAL POLISH CO.

INDIANAPOLIS INDIANA

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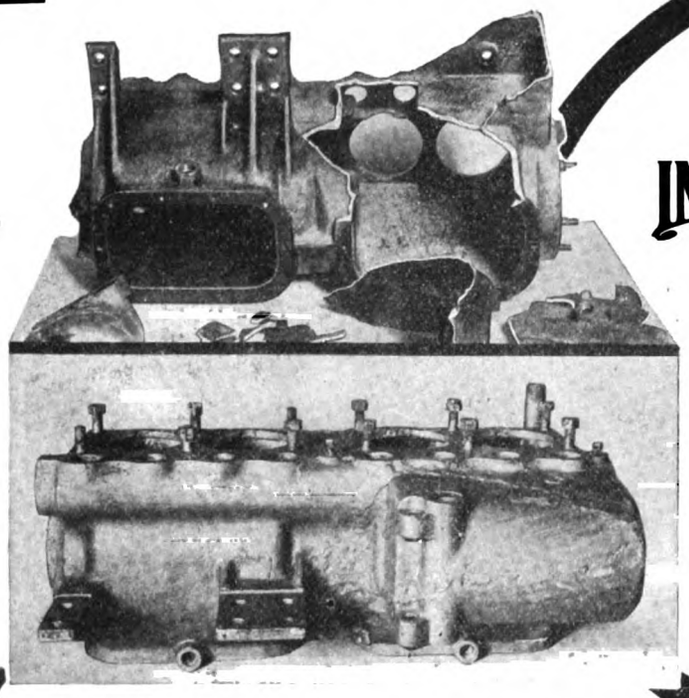
2 PROFIT MAKERS FOR GARAGES



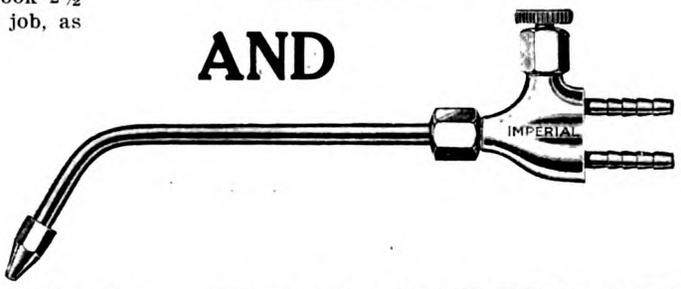
The above was an E. M. P. 30 Aluminum Crank Case broken by a connecting rod coming loose. It was prepared for welding in 3 hours. The pre-heating took 2½ hours. The welding 45 minutes. The complete job, as good as new, cost $20.00.

IMPERIAL WELDING CUTTING EQUIPMENT
OXY-ACETYLENE PROCESS

No garage equipment is complete without one of these outfits, which welds anything in metal and cuts anything in wrought iron or steel.

The cost of the outfit is small. The opportunity for profitable repair work is unlimited—work that otherwise could not be touched. It is also a service greatly appreciated by patrons, when, in a few hours, a part can be made whole which otherwise would have to be replaced by a new one after days or weeks of delay.

AND



IMPERIAL LEAD BURNING EQUIPMENT

This outfit enables you to burn storage battery plates and do other custom lead burning quickly and efficiently. Four styles are furnished, depending upon the gases you wish to use: No. 20, for acetylene and oxygen; No. 21, for oxygen and hydrogen; No. 22, for hydrogen and compressed air; No. 24, for illuminating gas and oxygen.
The apparatus is adapted to nearly every condition of the shop, at minimum cost, insuring the greatest possible safety. It consists of a small torch with a needle point flame, best adapted to the purpose, together with gas regulating equipment. If you already have an Oxy-Acetylene welding outfit, the lead burning torch, bench block, hose and connections are all you need buy.

New literature just issued upon both of the above equipments, giving complete descriptions and valuable data.

THE IMPERIAL BRASS MFG. COMPANY
517 So. Racine Ave., CHICAGO, ILL.

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VL VI. PAWTUCKET, R. I., MARCH 1917. No. 11

N. A. C. C Supports the President in War Crisis

Co-Operation Is Given at Once by Business Heads of the Automobile Industry.

The members of the National Automobile Chamber of Commerce at a meeting, marked by record attendance, pledged themselves as subject to the call of the authorities at Washington for any emergency, offered to the President and other government officials their fullest co-operation and the use of their factories, equipment and resources.

A telegram was sent to President Wilson, with duplicates to Secretary Daniels of the Navy and Secretary Baker of the War Department, extending the chamber's support. It read as follows:

"The members of the National Automobile Chamber of Commerce assembled here today offer and pledge you the fullest co-operation in the present crisis. The automobile industry, which is the third largest in the United States, is ready to serve its country with all its resources of trained mechanics, machine tool equipment and modern factories. We know our industry can be of immediate help in preparing our country for any emergency and desire you to feel our membership of 101 manufacturers is ready and available subject to your call."

DEPPE MOTORS CORP. WILL BUILD AUTOMOBILES.

The Deppe Motors Corp., which was organized during the first part of the year with $5,000,000 authorized capital, will engage in the manufacture of a pleasure car to incorporate the Deppe patented devices and also to acquire interests in tractor, truck, engine and aeroplane companies that will use the same devices in their engines. The Deppe patents cover inventions by W. P. Deppe of New York, including a superheated gas generator, which makes a superheated gas of all fuel oils and Deppe engines.

The directors of the company are: W. P. Deppe, C. E. Parsons of Parsons & Simson, consulting engineers; N. D. Lancaster, director of the Howe Scale Co.; M. O. Guiss and R. B. Sperry of Sperry & Co., investment brokers.

J. M. QUINBY & CO. OFFER BODY PLANT.

The J. M. Quinby & Co., Newark, N. J., one of the oldest and best known automobile body builders in the country, which has been in existence for over 80 years, will sell its plant and the owners are to retire from business.

The company started on the production of automobile bodies over 17 years ago and were among the first to use aluminum in the construction of bodies. The company is capitalized for $200,000. W. W. Ogden is president of the company and H. D. Ogden vice president and treasurer.

Fageol Motors Co. Will Not Book Car Orders

Using All Available Effort to Furnish Aviation Motors for the Next Six Months.

The Fageol Motors Co., Los Angeles, Cal., makers of the Fageol car, which made its debut at the Chicago Automobile Show and attracted great attention on account of its price, $9500 for the chassis alone, has announced no further orders for cars will be taken until the present needs of the War Department are satisfied for motors for use in aeroplanes.

The Hall-Scott Motor Car Co., makers of the Hall-Scott Aviation motor, which is used in the Fageol car, has received an urgent request from the War Department to use every effort to furnish all available aviation motors for the next six months, and in view of this demand the Fageol Motors Co. has agreed to allow the Hall-Scott Co. to use its allotment of motors for this period to help in filling the demands of the government.

CAR TO BE MADE IN SALT LAKE.

A company is being formed in Salt Lake City, Utah, to manufacture in that city a car recently designed by C. A. Cawley. It will have four-cylinder, 41 horsepower engine and will sell for $985.

Peerless Earnings Shown as $6.78 Net a Share

Big Company Charges Off as Net Loss on Munitions and Special Foreign Contracts.

The Peerless Truck and Motor Corp. for the year ending Dec. 31, 1916, reports net profits of $1,358,810 after deducting the interest for the year on $5,000,000 notes outstanding and charging off $550,637 as a net loss on munitions and special foreign contracts of the General Vehicle Co.

This showing compares with net earnings in 1915 of $2,555,773 after paying a full year's interest on the notes on which there actually accrued in that year only one month's interest.

The net earnings in 1916, after deducting $2453 for preferred dividends on stock of the Peerless Motor Car Co. now outstanding is equivalent to 13.56 per cent. on the $10,000,000 capital stock, or $6.78 per share on a par value of $50. This compares with earnings in 1915 of 22½ per cent., or $11.25 per share of Peerless Truck and Motor stock in 1915.

ANNUAL REPORT STANDARD MOTOR CONSTRUCTION CO.

The Standard Motor Construction Co. reports annual earnings for 1916 of $396,377, or 22 per cent. on the $1,800,000 stock, as compared with earnings of $277,959 in 1915.

Current assets at the end of the year were: $820,413, as compared with $658,824 at the close of 1915. In the year current liabilities decreased from $160,744 to $57,537.

UNIVERSAL VALVELESS CO. MAY CHANGE ITS NAME.

The Universal Valveless Four-Cycle Motor Co. of Muskegon, Mich., which was organized in that city last fall, will hold a special meeting April 3 at which a change of the corporate name will be discussed. As the citizens are larger owners in the company, it is proposed that the company be known as the Muskegon Engine Corp. The plant will be located near the Continental addition.

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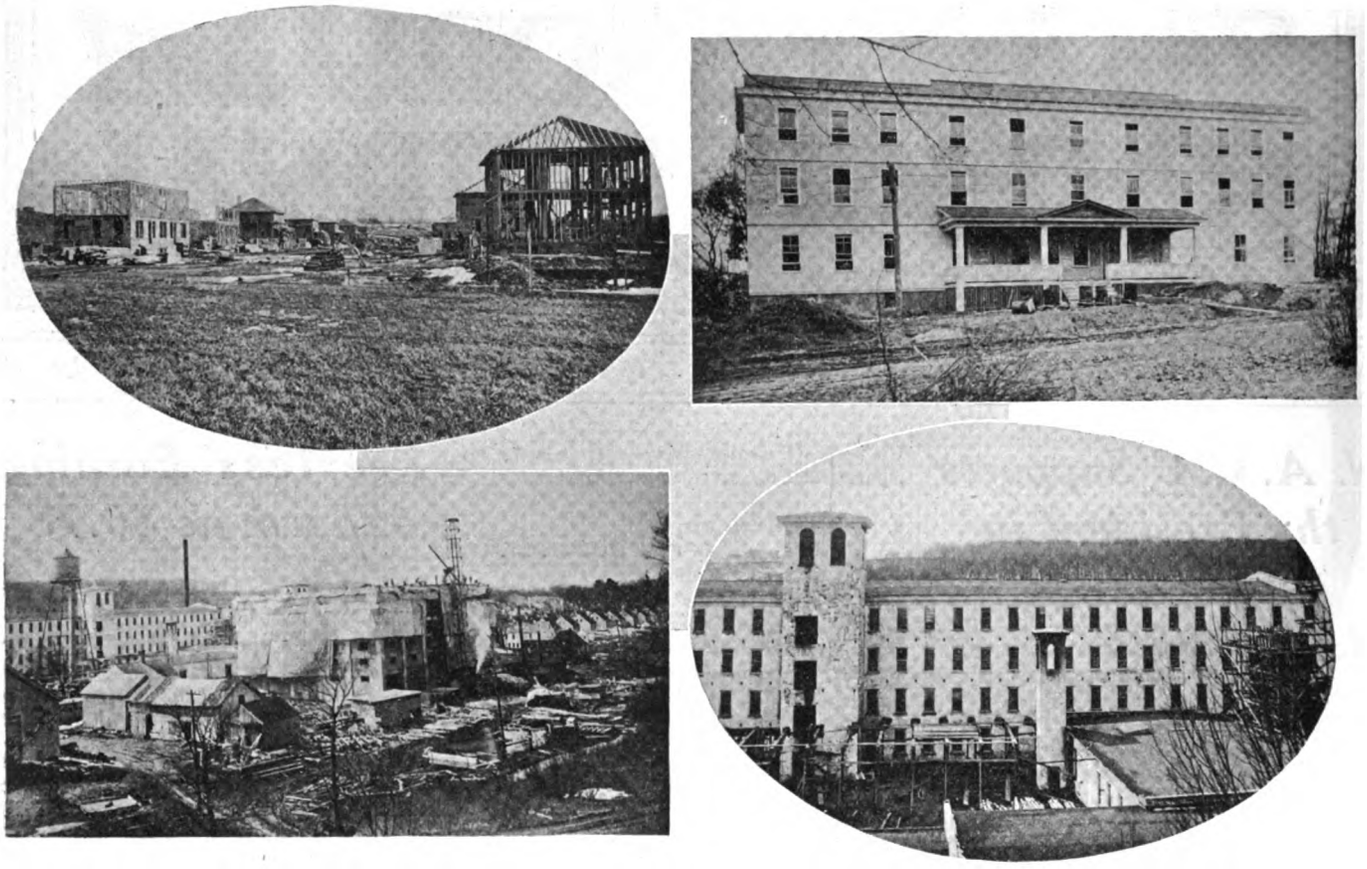

Upper Oval, Litchfield Avenue, Industrial Village of Goodyear, Conn.; At Left, Hotel; Lower Square, New Warehouse Rising in Foreground; Oval, Mill with Framework of Card Room Annex.

Industrial Village of Goodyear

THE Goodyear Tire and Rubber Co., Akron, O., is expanding its large cotton manufacturing plant in the village of Williamsville, in the town of Killing, Conn., where the fabrics that are used in making Goodyear tires will be produced on a large scale. This is the first tire concern to establish its own plant for manufacturing this important product that enters into the manufacture of tires.

As a nucleus for the plant, the Goodyear company purchased the mill property of the Williamsville Mfg. Co., which is located in the village of that name on the Quinnebaug river, between Dayville and Danielson, Conn. Following its acquisition the Goodyear Cotton Mills Co. was incorporated and the work of renovation and expansion commenced. There were three mills in the original property and a new weave shed, two stories in height, 180x220, was erected, which provided 23,500 spindles and 90 cloth looms. Additions have been planned and are now in course of construction, which when completed will give a total available manufacturing and storage floor space of 315,000 square feet. Of this large area 187,500 square feet is devoted to manufacturing operations and 127,500 square feet to storage purposes.

Opposite the mills is the new seven-story reinforced concrete, fireproof storehouse, which is connected with the former by a reinforced concrete tunnel under the village street. When this building is ready for use it will provide storage space for 10,000 bales of cotton.

Several groups of six-room cottages have already been erected to provide habitation for this large influx of workers and the site for a complete village has been laid out at a short distance from the plant on higher ground for 114 homes. These will include a group of four-tenement, four-room houses, two-family, six-room houses and one family houses. The main street in the village, which has already been laid out, is to be named Litchfield avenue, after one of the Goodyear officials. Modern improvements are being installed throughout the village and in the homes, the whole scheme being carried out after the latest ideas in planning industrial communities. Running water and electricity will be installed in each home and every house is provided with a spacious porch and ground space in back sufficient for a small garden for each family. These houses are designed for use by families, quarters for the unmarried help being provided for by the erection of a 60-room hotel with all modern conveniences. This hostelry will have a large piazza in front facing on a small park. This will be known as "Goodyear House."

A social club has already been established and is headed by Robert W. Boys, the general superintendent.

When the establishment, as planned, is completed, it is proposed to have the name of the village changed to "Goodyear," the necessary petition to the postal authorities for this change having already been prepared for the required signatures. The site of the Goodyear Cotton Mills, Inc., is on a tract of 276 acres.

SHELDON AXLE WORKS BANQUET.

The Sheldon Axle Works officials, superintendents, department heads and their assistants were the participants in a "get together and good fellowship" session and banquet at the Reddington Hotel, in Wilkes Barre, Penn., recently. There were about 80 in the party that made merry following the banquet when Oppenheim's orchestra played and the assemblage took part in singing the popular songs of the day. J. Frederick Armstrong, secretary of the company, acted as toastmaster, and President Thomas H. Atherton, gave an interesting talk, in which he told of the actual labors of "the workers" in producing the real wealth of the Susquehanna valley in products that are in great demand in all parts of the world, and that the Sheldon workers represented and maintained from 8000 to 10,000 population of Wilkes Barre and vicinity.

MANAGER OF AUTOMOBILE.

Harry Tipper, for the past nine years advertising manager of the Texas Company and the present president of the Advertising Club of New York, has become general manager of the Automobile, New York.

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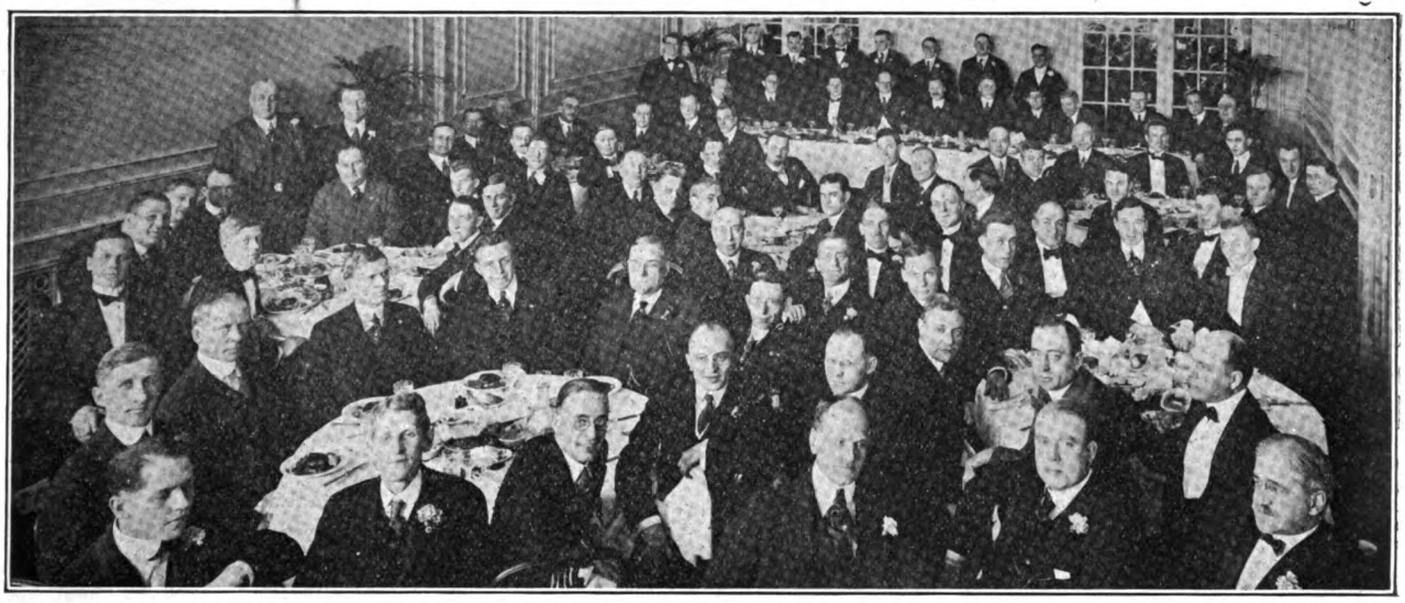

First Annual Banquet Tendered to the Parts and Material Manufacturers at the Kaiserhof Hotel, Chicago, During the 1917 Show, by the Elgin Motor Car Corp.

Co-operation Sought In Parts Delivery

Movement to Maintain Schedules and Facilitate Production Started at Elgin Banquet—Manufacturers Appreciate Points Made in Their Interest

The Elgin Motor Car Corp., Chicago, Ill., gave a banquet during the Chicago Automobile Show that attracted attention throughout the industry owing to the unique purpose for which it was held. Representatives of the various concerns furnishing parts for the Elgin car and materials that enter into the construction of the Elgin car were the guests of the company.

A discussion was held in which the point was brought out that if any one manufacturer fails to live up to his delivery schedule with the company, every other source of supply suffers equally with the company.

Following is a list of the firms represented and their representatives.

Peru Auto Parts Mfg. Co., Peru, Ind., Scott H. Penfield, president.

Salisbury Wheel and Mfg. Co., Jamestown, N. Y., Scott H. Penfield, vice president.

The Oakes Co., Indianapolis, Ind., F. Elbert Glass.

Diamond State Fiber Co., Bridgeport, Penn., R. N. Koolage.

Wagner Electric Mfg. Co., St. Louis, Mo., A. H. Timmerman, chief engineer, and J. A. Gelzer.

Western Auto. Machine Screw Co., Elyria, O., C. Wm. Couch.

Graton & Knight Mfg. Co., Worcester, Mass., G. W. Urquhart, branch manager.

Briggs & Stratton Co., Milwaukee, Wis., C. R. Matheny.

Roller-Smith Co., Bethlehem, Penn., Mortimer Frankel, district manager.

Theo. Geissmann & Co., Chicago, Ill., Milton Greenberger, secretary.

Builders Mfg. Co., Chicago, Ill., E. J. Peary, general manager.

Cortland Carriage Goods Co., Cortland, N. Y., M. C. Wood, assistant sales manager.

U. S. Tire Co., New York, N. Y., P. C. Anderson, district manager, and R. M. Hernandez, special representative.

Michigan Electric Welding Plant, Detroit, Mich., R. T. Middleton, sales manager, and Frank L. Taylor.

Standard Steel Tube Co., Toledo, O., Clarence E. Wade and A. L. Holmes.

Falls Motors Corporation, Sheboygan Falls, Wis., R. W. Randall, vice president, and A. R. Clas, secretary.

Firestone Tire and Rubber Co., Akron, O., A. W. Moore, branch manager.

Brown-Lipe-Chapin Co., Syracuse, N. Y., D. D. Ormsby, chief engineer.

McLean-Heames Co., Detroit, Mich., Rollin V. Hurd.

U. S. Ball Bearing Mfg. Co., Chicago, Ill., K. I. Fosdick, Western representative.

Meridian Mfg. Co., Indianapolis, Ind., E. W. Hughey, vice president.

Metal Specialty Co., Cincinnati, O., Joseph J. Smith, president.

Mutual Wheel Co., Moline, Ill., George McMaster, secretary and treasurer, and G. A. Wood, superintendent.

Machinists Supply Co., Chicago, Ill., A. W. Smith, sales manager.

Kalamazoo Spring and Axle Co., Kalamazoo, Mich., C. H. Gleason, sales and designing engineer.

Page Woven Wire Fence Co., Adrian, Mich., E. K. Conover, windshield department.

Imperial Brass Mfg. Co., Chicago, Ill., E. Kaufman.

Standard Parts Co., Chicago, Ill., Arthur J. Brandt.

New Departure Mfg. Co., Bristol, Conn., S. B. Dusinberre, Western sales manager.

Gardiner Storage Battery Co., Chicago, Ill., Martin O'Shaughnessy.

Davis-Mitchell Engineering Co., Cleveland, O., Chas. H. Davis.

Hammond Malleable Iron Co., Hammond, Ind., B. J. Steelman and H. C. Wanner.

Adams Truck, Foundry and Machine Co., Findlay, O., G. M. Carter, vice president and general manager.

Reed & Glaser, Indianapolis, Ind., W. S. Reed.

Elgin Motor Car Corp., Chicago, Ill., F. L. Brown, president; C. S. Rieman, vice president and general manager; C. F. Jamison, assistant general manager; B. J. Cline, factory manager; Will H. Brown, director of sales; F. X. Devlin, purchasing agent; A. R. Wellington, advertising manager; N. Edwards, Jr., manager extension department; Ford Rieman, extension department; B. F. Rieman, director.

GEORGE E. LANE WITH PARKER RUST PROOF CO.

George E. Lane has resigned from the Neumann-Lane company to join the executive forces of the Parker Rust Proof Co. of America at its main plant in Detroit.

George D. Edwards, Jr., formerly of the Hayes Manufacturing Co. and recently with the Springfield Metal Body Co., has been appointed purchasing agent of the Parker Rust Proof Co. of America.

FURTHER RISE IN TIRE PRICES IS PREDICTED.

Colonel Samuel P. Colt, president of the United States Rubber Co., in a statement given out to the effect that his company was now making 12,000 tires a day and would have a daily capacity of 14,000 when the new additions to the Morgan & Wright plant at Detroit were completed, predicted that another rise in prices of tires could be expected within a month.

HOUK WIRE WHEEL SOLD.

The Wire Wheel Corporation of America of which John F. Alvord is the president, has acquired the George W. Houk Co. and the Houk Wire Wheel Corp.

INDIANAPOLIS RACE OFF.

Owing to the war crisis the Indianapolis Speedway race, May 30, has been canceled by the management.

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What Is Not Conspiracy in Advancing Prices—Answers to Inquiries

By ELTON J. BUCKLEY.

HERE is an interesting case on a vital subject:

If this letter is used for publication, I want you to suppress both the name and the address. I have no objection to its being published if that is done. Myself and six competitors have about all the business of this county in the above line. There is no association here, we have no working agreement, but are friendly with each other.

About a year ago we were selling ——— at $1.25 per dozen. That was about 10 per cent. above the regular price. There seemed to be enough of a supply and all the holders were fairly free sellers. About a month ago a scarcity developed because of a heavy advance in certain items of cost which enter into the article, and it became difficult to buy. All of the six firms here had good stocks, but we knew that when we went into the market to replenish we would have to pay a heavy advance. Our selling prices have, therefore, been advancing, and today average about $1.75 per dozen. The result is that the demand has fallen off and only one of the six houses has had to go into the market to buy again.

There is very little difference between the price of the six houses—we are all selling around $1.75, though sometimes we may shade say 2½ cents. Of course we are making a very handsome profit on our cost, which was 95 cents.

A week ago I was called on by the prosecuting attorney of this county, who told me he had had complaints that we were in a conspiracy to advance the price of ———. He said he expected to bring a law suit against all six on the charge of restraining competition, and he wanted to hear if I had anything to say. It seems that he called on all the other five and said the same. Everybody gave him the same story, that there was no conspiracy, and that we had all reached about the same price because the price had worked itself up to that figure, and the public were willing to pay it. We have no further information since as to whether suit will be begun or not, but rather expect it will be. I am laying the matter before you in order to get your opinion as to whether we are open to any trouble.

I have done more than this correspondent asked me to—I have suppressed the name of the product he mentions in his letter, mainly because I want the matter to stand as representative of a principle, rather than tie it to one specific case involving one product.

I have no hesitation in saying that if this correspondent accurately states the facts, if he and his five competitors have not combined among themselves to advance the price, if there was no arrangement or understanding, but if on the other hand they all advanced the price simply because scarcity is always expected to advance a price, and because the tendency was upward, and because some one of them started it and succeeded—then there is no conspiracy, no restraint of trade, no interference with competition. There is nothing whatever illegal about the situation, and I know of no law, either of Congress or of any state, which will justify the bringing of a suit.

The attorney general of the United States in a letter to Senator Borah on the food situation, said the same thing in different words a few days ago. He said:

> Increases in prices, brought about not by agreement, conspiracy or monopoly, but by a common selfish impulse of traders to take advantage of the extraordinary condition of the times, are not punishable under any existing federal law, no matter how completely lacking in economic justification, no matter how extortionate.

He speaks for the federal law which means acts of Congress. Perhaps I have some qualification to speak as to state laws, with which I keep rather closely in touch. No state in the Union has an act which would make a crime of the condition described by the above correspondent. I may say, however, that I have reason to believe that an attempt will shortly be made to pass in some of the states an act which will prevent the charging of exorbitant profits by holders—even where there is no conspiracy and no connection—by allowing governmental seizure of goods on which an excessive profit is being charged.

To go back to the present situation, the danger, where all the houses in a territory, as in this case, advance the price of a given commodity to about the same figure in about the same time, is that the court might consider the very unanimity of action some evidence of conspiracy, and send the question whether there is conspiracy to a jury, which would, of course, convict with great satisfaction. It is a pretty poor lawyer or detective who cannot dig out of such a situation bits of evidence which when pieced together would make a very suspicious showing. Chance remarks, ill-considered advertisements or circular letters and a host of other possible trifles are always obtainable.

The appeal courts would say in substance: "The evidence of conspiracy was weak, perhaps, and possibly had we been sitting as the jury we would not have believed it, but there was enough of it to make the question one of fact, to be decided by a jury." And a conviction, with fine or imprisonment, stands which will forever implant in the mind of its victim a feeling that there is no justice in all the land.

(Copyright, March, 1917, by Elton J. Buckley.)

We present below answers to inquirers who sought the advice of Mr. Buckley through the Legal Department of the Accessory and Garage Journal. The service is free to subscribers to this magazine.

(P. E. K., New York City.)

Accessory and Garage Journal,
Pawtucket, R. I.

Gentlemen:—Kindly inform me regarding the new license law of New Jersey. There seems to be some misunderstanding of it here. Will an auto of New York registry have to pay an additional license fee for chauffeurs and a New Jersey registry fee aditional, if he goes through the State of New Jersey—or any additional fee at all if passing through that state?

Ans.—Our understanding is that the new New Jersey act does not change the reciprocal relations between New Jersey and New York, which permits cars from each state to tour through each other's territory without paying a license. A statement secured directly from the New Jersey department of state, says:

"The State of New Jersey extends reciprocity privilege to non-residents for a period of 15 days in any one year, and to the questions which you propound in your communication we answer in the negative, provided the tour of the New Yorker through New Jersey does not exceed 15 days. In brief, no fee whatsoever is exacted by this state for allowing a car registered in another state to pass through the commonwealth of New Jersey."

Accessory and Garage Journal,
Pawtucket, R. I.

Dear Sir:—My wife owns a Ford car runabout which I use in my business, fitting it with a truck body. In case my creditors should come in and take my business, could they legally take possession of the automobile? She bought the machine and has a bill of sale for it.

Ans.—Your creditors can undoubtedly seize the Ford car which you are using in your business. It is a fundamental principle of law that a bill of sale secretly entered into, and not attended by any change in possession is not good against the creditors of the person in whose hands the property is left. In other words, your creditors have properly given you credit upon the strength of your ownership of a valuable automobile. If they have done that you cannot deprive them of their security by showing a bill of sale and thus defeat them in an effort to collect from you.

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Group of District and Branch Managers of Fisk Rubber Co., Chicopee Falls, Mass., Called from the Field Recently to Participate in the Company's 1917 Conference.

Activities of Prominent Men of the Industry

Resignations, Promotions and Other Changes in Personnel of Motor Vehicle Manufacturing and Merchandising Companies and Allied Businesses.

Alfred H. Bartsch has resigned as advertising manager of the Bosch Magneto Co. to become a member of the firm of McLain-Hadden-Simpers Co., advertising and merchandising council of Philadelphia and New York.

Robert S. Westcott, assistant advertising manager of the Bosch Magneto Co., has assumed the duties of advertising manager and will serve in that capacity at the present advertising offices of the company, 1764 Broadway.

Ludwig Arnson, for four years sales engineer of the Longuemare Carburetor Co., has been appointed Detroit representative of the Duplex Engine Governor Co., Inc., having an office at 901 Kresge building. Mr. Arnson is well known among engineers in connection with carburetion matters and is well fitted for his duties. He will represent the company in the states of Michigan and Ohio.

C. E. White has been appointed Chicago branch manager of the U. S. Light and Heat Corporation. For several years past he has been manager of the Detroit Battery Co. of Detroit.

Walter M. Bieling has been appointed central state sales manager of the Nordyke & Marmon Co., Indianapolis, Ind. He will sell cars in Ohio, Indiana, Kentucky and adjacent territories. H. H. Brooks, formerly with the Marathon Motor Car Co., Nashville, Tenn., is the assistant sales manager, and Gerald Fitzgerald, formerly manager of the Minneapolis branch of the Remy Electric Co., Anderson, Ind., has joined the sales force.

Howard W. Fenton has been appointed advertising manager of the Empire Automobile Co., Indianapolis, Ind., to succeed Tom O. Jones, who has resigned to join the staff of J. B. Crockett Co., exporter, New York. He was formerly with the Remy Electric Co., Anderson, Ind., and the Nordyke & Marmon Co., Indianapolis, Ind.

R. Bissell has joined the automobile spring department of the Detroit Steel Products Co. as research engineer. He was with the Dodge Brothers Motor Car Co. for the past three years. Mr. Bissell is a graduate of the engineering department of the Michigan Agricultural College. He is a member of the American Society for Testing Materials, national and local societies of automobile engineers, Detroit; Engineering Society, Steel Treating Research Club and Tau Beta Pi, National Honorary Engineering Society.

Will H. Brown, New Director of Sales, Elgin Motor Car Corp.

Ralph R. Schrenkesen is now sales manager of the sales department of the Randall Motors Corp., eastern distributors of the Grant Six. He was formerly in the sales department of the Packard Motor Car Co., and with the Chalmers Motor Co.

H. L. Gilbert, former director of the Ohio Buick Co., Columbus, O., has been elected a director of the Monitor Motor Car Co.

Walter H. Lumpkin, for several years with the Silvex Co., New York, has been appointed advertising manager of the concern.

Will H. Brown, Indianapolis, Ind., has been appointed director of sales of the Elgin Motor Car Corp. of Chicago. He was formerly vice president and assistant general manager of the Willys-Overland Co.

Scott F. Hunt has resigned as engineer of the Zenith Carburetor Co., Detroit, to become associated with the organization of the Stromberg Motor Devices Co., Chicago.

A. G. Frost has joined the sales staff of the Chalmers Motor Co., and will do special work under the direction of E. C. Morse, vice president and general manager.

Alex K. Nairn has become sales manager of the Gurney Ball Bearing Co., Jamestown, N. Y. He formerly occupied a similar position with the Hess-Bright Co. T. T. Fauntleroy has become the New York branch manager of the Gurney Co. He was formerly with the Pathfinder.

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Ernest L. Smith has been appointed Disbrow distributor for the New England territory, and will handle the district from his headquarters at 80 Brookline avenue, Boston, Mass. He has contracted for a large number of cars and is now appointing sub-agents in Maine, New Hampshire, Vermont and Massachusetts.

W. F. Gordon has been appointed manager of the Smith Motor Truck Corp., the newly established branch at 905 Southwestern Life building, Dallas, Tex. Mr. Gordon has been a traveling representative for the Smith company for some time.

George R. Morris is now vice president and general manager of the Kaufmann-Morris Co., Inc., New York City. He has been associated with the firm for several months in the distribution of Premier cars.

S. Deutsch is vice president and sales manager of the Clum Mfg. Co., Milwaukee, Wis. The company makes motor car switches. The offices are in Detroit.

A. C. Rice has resigned as sales manager of the Eclipse Machine Co., Elmira, N. Y., and will be general sales manager of the Cyclemotor Corp., Rochester, N. Y.

G. T. Brackenridge, who has been with the General Motors Co., has resigned and accepted a position with the American Forging and Socket Co. at Pontiac, Mich.

H. T. Cope, former secretary and treasurer of the Trio Mfg. Co., Detroit, has joined the Bantam Ball Bearing Co. as mechanic and sales engineer. Mr. Cope was with the Trio company until the concern was sold to the National Machine Products Co.

Paul Arthur has joined the Simms Magneto Co. as mechanical engineer.

George Starke has resigned from the Maxwell Motor Co. as director of publicity and has joined the Campbell-Ewald Co. in a similar capacity.

F. George Walker is now president of the Walker Joint Co., manufacturer of universal joints, with offices in Detroit. He was formerly with the Raybestos Co. Harold F. Allen is treasurer.

C. Carker, formerly traveling representative in England for the Haynes Automobile Co., has joined the sales force of the Regal Motor Car Co., Detroit, as district manager. W. H. Martleman, formerly Regal distributor at Philadelphia, has rejoined the Regal company as district manager at Philadelphia.

Alford A. Goenner, Basle, Switzerland, will distribute Jeffery cars and trucks in Basle, Lucerne, Berne, Zurich and Geneva.

Neil Macneale has been appointed general manager and a director of the Corcoran-Victor Co., lamp maker, Cincinnati, O. Mr. Macneale is former owner of the Toledo Electric Welder Co.

J. W. Hawk, formerly manager of the Chalmers branch in Salt Lake City, has been appointed western sales manager for the Chalmers over territory including everything West of Denver and also Honolulu.

F. B. Drouillard has been appointed superintendent of the new Maxwell plant in St. Louis.

J. M. Witters has joined the Emil Grossman Mfg. Co., and he will represent the concern in the sale of Red Head spark plugs and Ever Good motor necessities among the manufacturers of the Middle West. He has been for the past 10 years actively identified with manufacturing interests.

R. Clifford Durant has become vice president of the J. W. Leavitt Co., which has taken the Southern California distribution for the Chevrolet. The Leavitt company handles the Premier, Harroun and Columbia cars on the coast.

J. J. Harrington has been appointed New England manager for the Ford Motor Co., Detroit. He succeeds Charles E. Fay. Mr. Harrington comes from the Ford home office and was also branch manager in Cincinnati.

E. A. Kingsbury has resigned as secretary of the Chase Motor Truck Co. of Syracuse, N. Y.

H. E. Bradner is now president, as well as general manager of the Auto Body Co., Lansing, Mich. Fred C. Ruch has been advanced from assistant secretary to secretary. The other officers remain the same.

Ernest L. Smith, Newly Appointed Disbrow Distributor for the New England Territory.

H. L. Dickey has joined the forces of the Moto-Meter Co., Long Island City, N. Y., and will have charge of the jobbing end of the sales department. He was manager of the New York office of the Findeisen & Kropf.

Herman C. Maise has resigned as chief engineer of the Springfield Body Co., Springfield, Mass. He entered the automobile industry from the carriage industry, where he was a body designer.

F. Y. Horn is now district manager for the Amazon Rubber Co., Akron, O. He will have his headquarters in Chicago, Ill.

Mark C. Manship succeeds Leroy G. Peed as manager of the Philadelphia branch of the Maxwell Motor Sales Corp. Mr. Manship has been with the company five years and has served in practically every department.

L. D. Brown is now the treasurer of the B. F. Goodrich Co., succeeding W. A. Means, who has become vice president. Mr. Brown was formerly cashier of the First-Second National bank. He will still remain as a director of the several Akron banks in which he is interested.

Fred W. Jackson, Holland, Mich., who is a pioneer in the automobile industry, has been appointed territorial sales manager for the Elbert-Duryea Farm Tractor Co., Chicago. The company was recently organized to manufacture a two-wheeled farm tractor.

Harry T. Dunn, vice president of the Willys-Overland Co., has resigned. Mr. Dunn is president of both the Fisk Rubber Co. and the Federal Rubber Co., and found it necessary to devote his time to the rubber interests. He will remain as director of the Willys-Overland Co.

T. B. Van Alstyne, formerly advertising manager of the Class Journal Co., has become president of Ewing & Miles, advertising agents, Times building, New York City. Fred J. Wagner is secretary and C. A. Williams is vice president.

Sidney D. Waldon has been appointed captain of the aviation section of the U. S. army, and to assist Howard E. Coffin in the naval consulting board and in national preparedness. He was formerly vice president of the Packard Motor Car Co.

Mel Stringer is now general sales manager of the Keller Engineering and Sales Service, Chicago. The company handles the entire output of the H. A. Miller Mfg. Co., Los Angeles.

John F. Palmer of Riverside, Ill., who has been prominently identified with the tire industry for nearly a quarter of a century, and who invented the cord tire, has developed a new tire, which will be manufactured by the Palmer Tire and Rubber Co., recently organized for the purpose. The plant is located at St. Joseph, Mich., and has 70,000 square feet of floor space. The new tire is called the Palmer flat, cable cord tire. The capital of the company is $500.000. Mr. Palmer is president, C. W. Bully vice president, W. E. Bryan secretary and M. D. Wilbur treasurer.

George W. Dunham, president of the Society of Automotive Engineers, and formerly identified with several of the largest automobile manufacturers in the country in the capacity of engineer, has designed a new tractor. For the past two years he has been acting as a consulting engineer and the announcement that he had designed a farm tractor came as a surprise to the engineering fraternity. It is understood that a company is being formed to manufacture and market his new invention.

Nemorin Causan, a designer with the Chalmers company and well known as a creator of several well known racing cars, has resigned an account of ill health and will return to France to undergo medical treatment for his illness, which was caused by gas poisoning while he was in service at the front.

J. M. Case, formerly advertising manager of the Scripps-Booth Corp., has been appointed advertising and sales manager of the United Motors Co. He has been succeeded by S. W. Foran.

J. W. Guthrie and H. W. Hayden are preparing a factory at York, Penn., for

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Goodyear Promotions: Left to Right—R. S. Wilson, New Manager Motor Truck Tire Department; G. E. Brunner, Manager of Service Department; C. W. Martin, Jr., Manager Southern District; W. R. Bliss, Manager New York District.

the manufacture of the Dey Electric car. The patented axle and motor system invented by Dr. Steinmetz of the General Electric Co., it is understood, will be used.

R. S. Wilson, the new manager of the motor truck tire departments of the Goodyear Tire and Rubber Co., Akron, O., has been manager of the service department at Akron for the past four years. He has been succeeded by G. E. Brunner, who was his assistant in the service department. Other changes in the Goodyear organization include the promotion of Walter R. Bliss to be manager of the New York district for the Goodyear Tire and Rubber Co., and the promotion of C. W. Martin, Jr., to the management of the southern district for the Goodyear company.

William B. Newlin, passenger car sales manager of the Pierce-Arrow Motor Car Co., Buffalo, N. Y., has resigned and will be associated with an agency in the Southwest to sell Pierce-Arrow cars and trucks in Texas and Oklahoma. He is entering the concern of Gray & Reardon as vice president and sales manager, a corporation having been formed to handle all of Texas and the greater part of Oklahoma with the title of Gray, Reardon, Newlin Co., which will have headquarters at Dallas and will maintain branches at all important points in two states.

George H. Lloyd has joined the staff of the Pilot Motor Car Co. of Richmond, Ind. Mr. Lloyd was formerly sales manager for the Velie company.

William H. Moore, for eight years associated with the Gramm-Bernstein Co. at Lima, O., has resigned to join the forces of the Garford Motor Truck Co. He will be connected with the metropoliton district as Brooklyn sales manager.

F. W. Wilkens, formerly with the Hupp Motor Corp., Detroit, has become general sales manager for the Edgar F. Sanger Co., Milwaukee, Wis., state distributor of the Stearns-Knight and Hupmobile. The company was recently incorporated at $75,000.

Robert B. Pierce has been appointed manager of the Cleveland branch of the Kelly-Springfield Tire Co., Akron, O. He was formerly the chief adjustor for the company.

L. J. Eshleman heads the Dale Body Co., the new auxiliary to the Allen Motor Co., Fostoria, O. The other officers are: Vice president, Fred Freese; second vice president, Frank Kingseed; treasurer, M. A. Thomas.

C. L. Nedoma has been appointed consulting engineer to the advertising department of the Chalmers Motor Co. and will co-operate with W. L. Agnew, director of advertising, toward improving advertising methods in the industry. In speaking of the appointment, Mr. Agnew said: "So far as we know this is the first time an engineer has been employed for the exclusive purpose of verifying mechanical statements made in advertising copy. While the Chalmers company has always checked technical statements with the engineering department, we recently decided that the increased scope of our newspaper and magazine campaign for the coming year and the preparation of catalogues, booklets and other literature made the exclusive service of a technical man necessary.

W. C. Durant of the General Motors Co. is one of the directors of the recently organized Saginaw Malleable Iron Co., Saginaw, Mich., which was recently organized to manufacture malleable iron castings for the automobile industry.

J. N. Lassen and R. T. Broadhead have organized the Compradores, Inc., in Detroit. They are representing the Primolite Co. of Indianapolis, the Detroit Gauge and Metal Stamping Co., Detroit Manufacturers of the Retlaw Gasoline Gauge for Ford cars, Fulton Grauter Carburetor Co. of Cincinnati and the Detroit Motor Lock Co.

William B. Newlin, Who Is Pierce-Arrow Distributor in Texas and Oklahoma.

Charles W. Hatch, formerly with the Standard Parts Co., has been appointed director of sales for Parish & Bingham of Detroit.

G. B. Spence has severed his connection with the Standard Detroit Tractor Co. to become sales manager of the Uni-Tractor Co., Chicago, maker of tractor attachments for Fords.

A. A. Templeton has been elected president of the Detroit Board of Commerce, succeeding Edwin Denby, treasurer of the Denby Motor Truck Co., who has retired. He is president of the Detroit Seamless Steel Tube Co.

H. Montgomery has resigned from the purchasing department of the Hupp Motor Car Corp. to join the purchasing department of the Harroun Motor Car Corp.

E. G. Crawford, formerly Ohio district manager for the Regal Motor Car Co., has been appointed sales promotion manager to succeed R. W. Donahue, who has resigned.

Robert K. Davis has filed his entry for the intercity reliability tour, which starts from Buffalo, July 17, with W. S. Gilbreath, manager of the Detroit Automobile Club.

H. L. McClaren has become vice president in charge of sales of the Ajax Rubber Co. He will have the complete oversight of the sales of both the Ajax and Racine products, which are to be marketed separately. Mr. McClaren has had long experience in the tire business and his executive capacity evidenced in the rapid upraising of the Racine business, his activity in handling the affairs of the combined organizations was forecast at the time of his direct entrance into its management.

Fred T. Nesbit has been appointed distributor for Commerce trucks in Greater New York, Long Island and Westchester county. He is located at 1476 Broadway.

R. C. Hupp, vice president, director and chief engineer of the Emerson Motors Co., has opened an office in Long Island City, where he is preparing plans for a new enterprise. He was formerly connected with several other companies.

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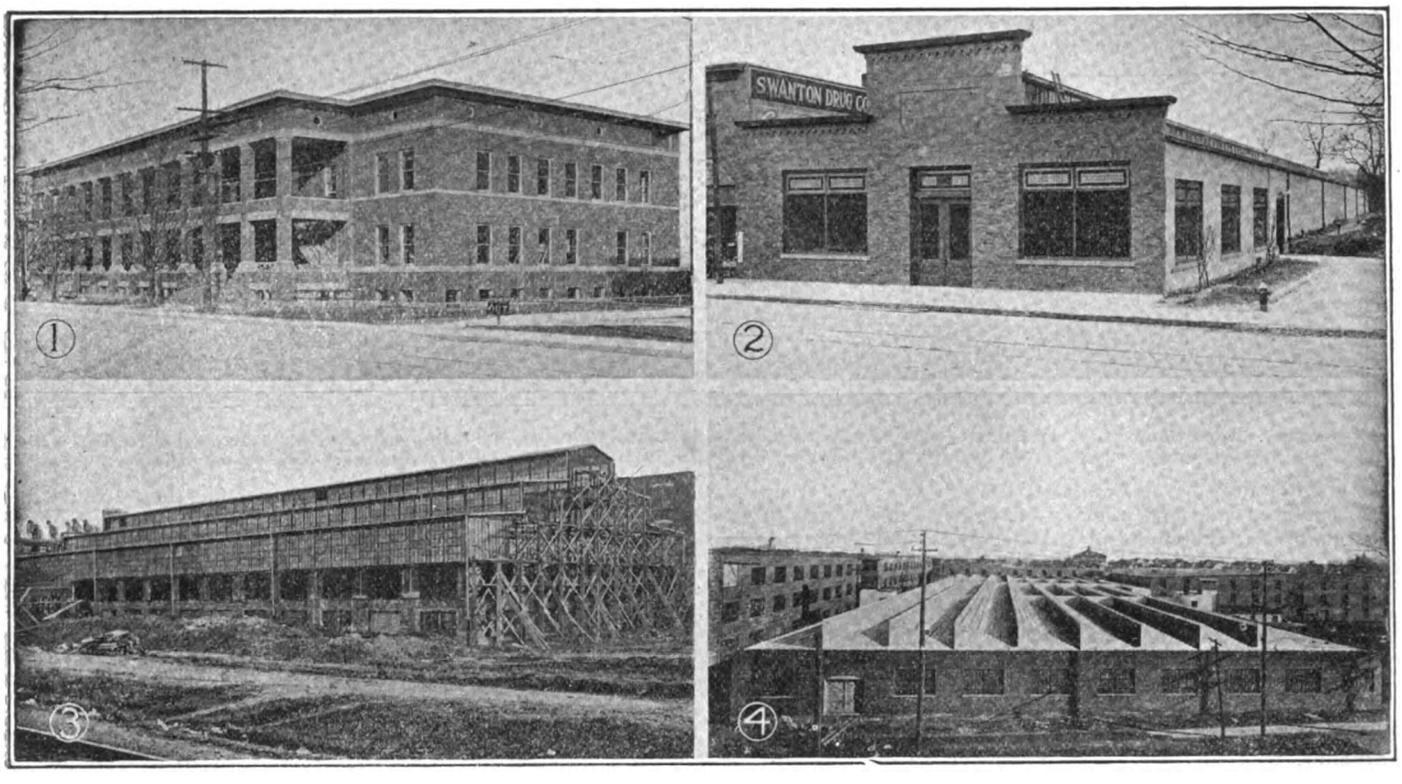

1—New Reo Club House, Part of Reo Welfare Department.
2—Show Room and Garage Connected with Reo Factory.
3—Heat Treating Plant Fitted with Scientific Equipment.
4—Addition Made in 1916 to Machine Shop at Reo Factories.

HAPPENINGS AMONG THE CAR AND PARTS MAKERS.

What Several of the Leading Manufacturers in the Motor Vehicle Industry and Allied Lines Are Doing or Have Under Consideration.

The Reo Motor Car Co., Lansing, Mich., in the expansion of its plant, is constructing a big addition for the heat treating department. This building is a modern steel and brick construction, 92x224 feet, and cost over $50,000. Another large addition to the plant is the new addition to the machine shop and parts warehouse. This is a one-story building and is located between the larger buildings of the Reo plant. It is 175x480 feet and cost nearly $100,000. The most conspicuous of the new units in the Reo plant is the handsome Reo club house. It is a two-story building with sub-basement and cost nearly $100,000. It contains an auditorium with gallery, which has a seating capacity of 1700. Building and expansion at the Reo plant has never ceased since the company started and General Manager Scott says there has never been a day when carpenters, brick layers, structural steel workers, electricians and millrights were not busy adding to the Reo plant.

The Richardson-Phenix Co., Milwaukee, Wis., has opened a sales office in the Builders' Exchange, Cleveland, O., in charge of W. J. Oettinger. The office will handle the engineering details of all problems connected with the scientific lubrication of machinery and the installation of systems for circulating, filtering and sterilizing cutting oils.

The Van Dorn & Dutton Co., Cleveland, O., is now located in its new plant at the east end of the city. The main factory building is in two sections, one section two stories high, 50 by 250, and the other story 80 by 250 feet. At the rear is a large sub-story used for storage. The plant was designed for efficiency and all products are routed through from one end to the other.

The Du Pont Fabrikoid Co., Wilmington, Del., has purchased the Marokene Co., Elizabeth, N. J., which manufactures a material similar to fabrikoid and is used extensively by the automobile, carriage and upholstery industries.

The Columbia Axle Co., Cleveland, has added 100 workmen to its factory force. The company expects to turn out 30,000 axles in 1917. This will be twice the production of last year.

The Barley Motor Co., manufacturers of the Roamer car, will remove its organization and plant to Kalamazoo, where there will be 83,000 square feet of floor space. The new plant is part of the old Michigan buggy plant.

The Denneen Motor Co., Cleveland, anticipates placing on the market a new Denmo model ¾-ton truck. The company is arranging to take over a tract of 19 acres of land on which the new Denneen factory will be built. D. M. Dickinson has been appointed manager of local sales and service for the Denneen company. He was formerly with the Woolworth Truck Co. and the Champion Motors Company.

The Noble Motor Truck Co., South Bend, Ind., has been organized at Kendallville, Ind. The capital stock is $30,000. The company will manufacture a standardized motor truck having a capacity of two tons. The company will also manufacture smaller and larger trucks. C. J. Munton, is president; H. L. Postel, vice president; G. M. Patterson, secretary, and H. W. Bradtmiller, treasurer.

The Champion Motors Co., Cleveland, O., has opened an export branch in New Orleans. Ralph Appemon, a Pacific coast aviator, will be in charge. He has been in the service of foreign countries for three years.

The Apperson Brothers Automobile Co., Kokomo, Ind., is now located in its new factory and the plant is in full operation. The old buildings will be utilized, but practically all the manufacturing will be done in the buildings of the new group.

The Ton-A-Ford Co., Racine, Wis., is now in its new plant, which is the buildings formerly occupied by the Perfex Radiator Co. The company manufacture the light motor trucks embodying the Ford chassis. The daily capacity will be

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25 to 30 units. The Ton-A-Ford extension chassis retails at $345.

The Racine Mfg. Co., Racine, Wis., maker of motor car bodies, has been obliged to place its factory on a regular night shift to handle the orders for taxicab and other special bodies. The output has been increased to 80 touring car bodies and 15 closed bodies daily.

The Globe Motor Truck Co., St. Louis, Mo., has incorporated and will produce about 1000 trucks. Joseph E. Eddy is in charge of sales and advertising, and F. M. Woodward, formerly with the Alter Motor Car Co., Plymouth, Mich., is in charge of production. The concern has a new factory at East St. Louis, Ill., with sales offices in St. Louis.

The Auto Specialty Mfg. Co. has begun operation and will manufacture Bair-Bow springs, top holders, malleable iron parts and castings. The company employs 350 men.

The Weil-Wheaton Rubber Co., Minneapolis, Minn., has been organized to distribute the tire made by the General Tire and Rubber Co., Akron, O. The company includes F. Weil, E. M. Wheaton and W. N. Hunkins.

The Dorris Motor Car Co., St. Louis, Mo., has increased its capital stock from $300,000 to $1,000,000, and will use the money for the purpose of expanding its production. W. R. Colcord is president, succeeding H. B. Krenning. G. P. Dorris remains as vice president. Webster Colburn is treasurer of the company and A. C. Schmid is secretary.

The Dyneto Electric Co. has reorganized as the Dyneto Electric Corp., and has now a standing capital of $500,000 and will greatly increase the production of its Dyneto starting and lighting systems in the big plant at Syracuse, N. Y. In order to keep up with the orders for automobile equipment the company is running two shifts.

The Stewart-Warner Speedometer Corp., Chicago, have elected the following officers: President, C. B. Smith; chairman of the board, L. H. LaChance; secretary, T. T. Sullivan; vice presidents, V. R. Bucklin, W. J. Zucker.

The Hancock Mfg. Co., Charlotte, Mich., manufacturers of automobile specialties, has added a new building to its plant, to accommodate its blast furnaces. The increase of business has made it necessary to install an additional furnace. The company employs 228.

The J. P. Gordon Co., Columbus, O., has been forced to take over the section of its new factory that it had leased to the G-M Service Station. In the new space secured 100 power sewing machines have been installed. The company produces seat covers, tire covers and similar fabric specialties.

The Slocum, Avram & Slocum Laboratories, operating one of the largest machine shops in New York City, at 531 West 21st street, with several subsidiary companies, have established an automobile department for the purpose of manufacturing and selling on a royalty basis any automobile device which meets with the approval of their engineers.

The Ionia Auto Body Co., Grand Rapids, Mich., has acquired one of the Heinz pickle company's plants, which will be used for their manufacturing operations. The plant cost $85,000.

The United Motors Corp., which owns the New Departure Bearing Co., the Hyatt Roller Bearing Co., the Perlman Rim Corp., the Dayton Engineering Laboratories Co., the Klaxon Co., the Houk Mfg. Co., and the Remy Electric Co., did not exercise its option on the plant and the business of the Brown-Lipe-Chapin Co. of Syracuse, N. Y. Up to the time of the announcement that difficulties had arisen which made it impossible to consummate the negotiations for the purchase of the gear company's business, it was the general impression that the deal had gone through and that the United Motors had added another well known parts manufacturing plant to its holdings of prominent corporations in the industry.

As a result of the failure of the United Motors to exercise its option, the Brown-Lipe-Chapin Co. has no connection with it whatever.

The P. J. Durham Co., 761 Park Place, Brooklyn, N. Y., has been appointed an official service station of the Westinghouse Electric and Manufacturing Co. for their electric starting and lighting systems as applied to automobiles. The Durham company also represents the electric Auto-Lite company and the Gray & Davis systems in Brooklyn.

The Disbrow Motors Corp. has been incorporated with $300,000 capital to manufacture engines, motors and to carry on a business. The incorporators are: Louis Disbrow, 926 East 79th street, Cleveland, O.; J. J. Curl, 1826 West 81st street, Cleveland, O., and W. H. Byers, 125 Lake avenue, Saratoga Springs.

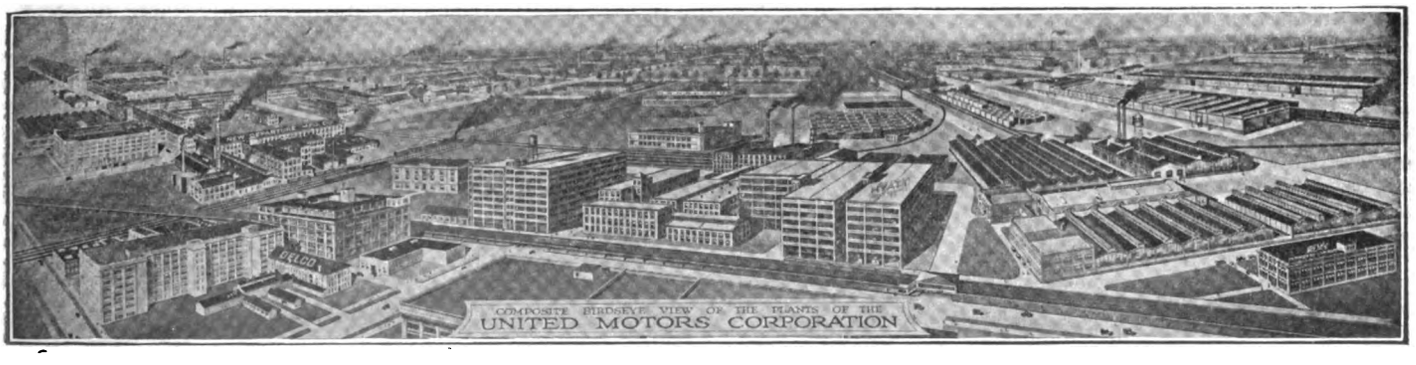
The Ford Motor Company, Detroit, Mich., has sent two of the new tractor plows to England. These machines will plow about six acres of land in eight working hours.

The Crow-Elkhart Motor Co., Elkhart, Ind., has established an export department, in charge of Pierre Mass, and will market cars throughout the world. Mr. Mass has had extensive experience, having travelled on many journeys to all parts of the world and having been manager of the export business of Swift Co., Ltd., Coventry, England, for eight years. He was also in the automobile business in Paris and at Brussels and in the shipping trade at Antwerp.

The Warner Mfg. Co., A. P. Warner, president of the company, makers of the Warner Auto Trailer, announces that he has purchased the interest of the company held by James Menhall, vice president, and as a result of the deal becomes the sole owner.

The Durable Motor Truck Co., Hammond, Ind., has been organized with a capital stock of $500,000. A factory building has been purchased and the concern will commence operations in the manufacture of small trucks. The officers of the new company are: President, Joseph Studer; treasurer, Charles A Foss; secretary, C. Brown.

The Prest-O-Lite Co., Inc., has appointed as battery service stations the following individuals and concerns: Verne Fisher, Wayne, Neb.; Tri City Electric Co., 525 Main street, La Salle, Ill.; Bradley's Dover Garage, 221 Central avenue, Dover, N. H.; Acme Garage Co., Inc., 739 Marin street, Vallejo, Cal.; Warren E Marshall, N. Bennington, Vt.; Anderson Automobile Co., Inc., 616 W. Okmulgee street, Muskogee, Okla.; Southern Motor Car and Accessory Co., Inc., 208-10 Jackson street, Alexandria, La.; B. B. Bennett, Drake, N. D.; Perry Auto Co., 1217-21 Willis avenue, Perry, Ia.; H. B. Hewitt, Main street, Stafford, Kan.; H. P Forney, La Crosse, Kan.; The Townsend Auto Co., 41 N. Washington street, Easton, Md.; Bladstrom & Swanson, Rockford, Ill.; Sutton Motor Co., 135-37 Gillespie street, Fayetteville, N. C.; Williams Street Garage, 241-45 Williams street, Decatur, Ill.; H. E. Willis, 8 Shaw street, Lebanon, N. H.; Fairmount Electric Service Station, Fairmount, W. Va.; Depot Garage, 30 French street, New Brunswick, N. J.; Buena Vista Garage, 2772 Woodward avenue, Detroit, Mich.; Huffine Motor Co., North Ninth street, Frederick, Okla.; The Service Garage, 344 Jefferson avenue, Detroit, Mich.



United Motors Corp., Progressive and Expanding, as Depicted Before Adding to Its Plants the Factories of the Klaxon Horn Company and the Houk Manufacturing Company.

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DYER PISTONS.

The Dyer light weight piston for Ford cars is designed to fill the demand for a light, yet strong piston. The maker explains that the metal is composed of elements which insure perfect bearing surfaces, toughness and durability, and that the castings are machined by special process to insure a uniform thickness of piston wall and a wrist pin hole, which is square with the sides of the piston. Special attention is paid to oil grooves. These pistons are made in standard and a number of oversizes and sold complete with wrist pin and rings. The manufacturer asserts that these pistons weigh one pound less than the standard Ford type, and that the limit of variation in weight is only two ounces.

Manufactured by the G. H. Dyer Co., 155 Brookline St., Cambridge, Mass. Write for prices.

SHOCK ABSORBER.

The National shock absorber consists essentially of a casing through which two blades pass, the movement being controlled by a set of specially designed shoes and cam rollers. The result of this construction, the makers say, is an unique but scientifically correct mechanism which permits perfect freedom of contraction of body springs, thereby preserving all their initial resiliency, but so retarding or modifying the rebound as to eliminate all shock and vibration.

Manufactured by J. S. Lang Engineering Co., 5 Park square, Boston, Mass. Prices upon request.

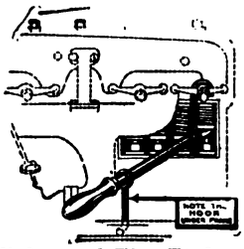
EVERLASTING HOSE.

This is a flexible gasoline hose in which no rubber is used; at the same time, however, it has the flexibility of rubber tube. It is constructed of a flexible steel core, covered with two plys of gasoline proof compound. Outside of this is a braid covering, which is protected by the final outside covering of water proof woven fabric. This hose is guaranteed for one year and is sold in any length and is made in two sizes, with couplings attached.

Manufactured by Chicago Tubing and Braiding Co., Chicago, Ill. Price, ¾ inch size, $1 per foot; 1¼ inch size, $2 per foot; couplings extra.

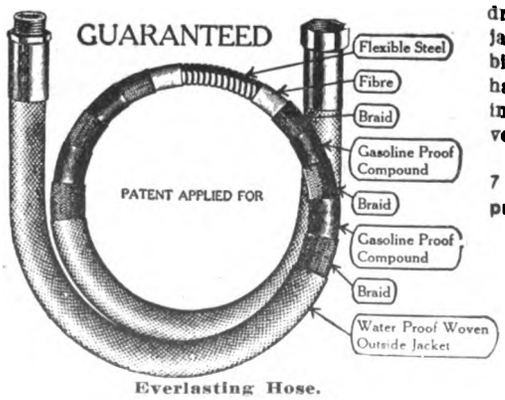
Pedex Pedal Extension.

Dyer Light Weight Piston.



Valve and Tire Tool.

National Shock Absorber.



Everlasting Hose.

PEDEX.

Pedex, a pedal extension device, makes it possible for two persons of different height to drive the same car with equal comfort. Pedex is designed to be attached to both the brake and clutch pedals, and the use of the permanent pedals is in no way impaired. Two adjustments are possible, so that the foot may be placed in a position of greatest comfort. In touring this article is a great help to the driver, making it possible for him to rest his feet by shifting to a new position.

Manufactured by American Car Accessories Co., 529 West 21st St., New York, N. Y. Price, $5 per pair.

VALVE AND TIRE TOOL.

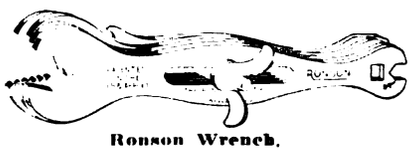
One of the many uses of this combination tool are shown in the illustration. For removing valve springs, etc., one of the hooks is placed over the manifold clip, the spring raised by the lever, which is hooked to the frame by the other catch, as shown. The valve spring may be left supported by the tool until the valve is replaced. This device may also be used as a tire tool. The end of the lever is inserted under the tire bead, the shoe pried over and the lever hooked to a spoke, thus giving an open point upon which to work.

Manufactured by King Specialty Mfg. Co., Brookline, Mass. Price, 75 cents.

RONSON WRENCH.

The new Ronson wrench combines eight size wrenches in one. A twist of the lock nut releases the size wanted. In addition to these wrenches, a screw driver, a bottle opener, and an alligator jaw wrench are contained in the combination. The whole outfit weighs but half a pound, is six inches long and ½ inch thick, and may be carried in the vest pocket.

Manufactured by the Art Metal Works, 7 Mulberry St., Newark, N. J. Write for prices.



Ronson Wrench.

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OPTIMUS AUTO POLISH.

A new automobile polish is announced under the name Optimus, which the makers expect to become a nationally known name. Tests of this polish have been made under the severest working conditions. A one-pint can of Optimus will clean and polish an average sized car twice, and the makers say that in many instances the polish imparted has lasted for several months. This preparation removes dirt and gum from the surface of the car and restores the original factory shine, after which treatment an occasional washing with water is all that is necessary to preserve its appearance.

Manufactured by the Optimus Mfg. Co., Inc., 113 Hanover St., Boston, Mass. Price for one pint can, $1.

MONDEX SHOCK PREVENTER.

The Mondex Shock Preventer consists of a series of inclined planes or cams—expanding and contracting disks of firm, but resilient rubber—which work on the wedge principle. When the body of the car moves downward the cams of the shock preventer expand and compress the rubber discs. The further the car body is forced downward on the axle the more forcibly are the rubber disks compressed. But on the rebound of the springs resistance is applied instantly.

The Mondex Shock Preventer does not work on friction, but on graduated compression of rubber by thoroughly lubricated inclined planes. These planes ride up on each other according to road conditions.

Manufactured by Puritan Machine Co., Detroit, Mich. Price per set of four. $12.

CARBON REMOVER.

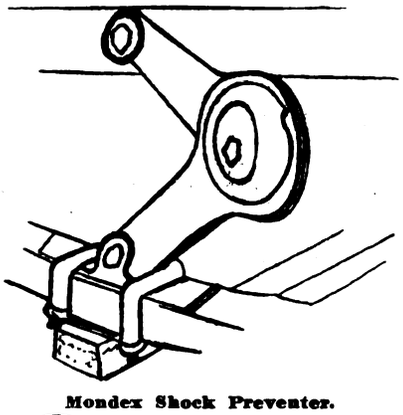
The Hart-Bell Carbon Remover not only removes carbon, but is also intended to prevent its accumulation. This device consists of a valve, which is screwed into the water cooling system, a length of tubing and a connection which is screwed into the carburetor manifold. The valve for the water cooling system has two adjustments, one to regulate the amount of water, the other the amount of air which passes through the tube to the intake. At each intake of gas a certain amount of water is admitted to the cylinder, which is immediately vaporized and cleans off the carbon deposits.

Manufactured by Hart-Bell Co., Times Bldg., N. Y. Price, $5.

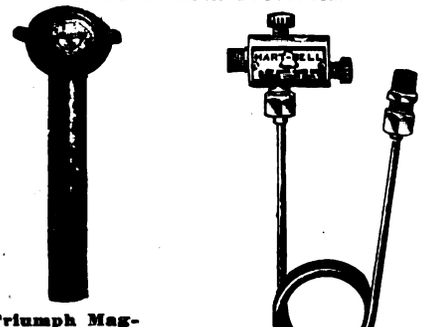
FOOT ACCELERATOR.

The New Era Foot Accelerator can be attached to any Ford car in a few minutes. There are no holes to drill nor is any machine work needed. It furnishes a perfect foot control and enables the driver to get the car under full speed in a minimum amount of time, and leaves his hands free to operate the steering wheel, horn or brakes.

Manufactured by New Era Spring and Specialty Co., 717 Mather St., Chicago, Ill. Price complete, $1.

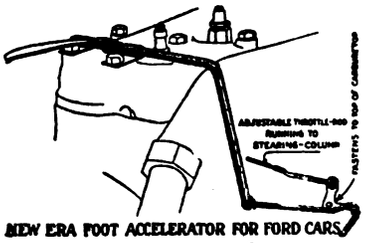


Mondex Shock Preventer.

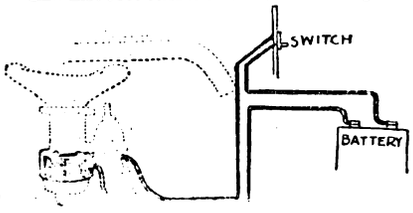


Triumph Magnetic Gage.

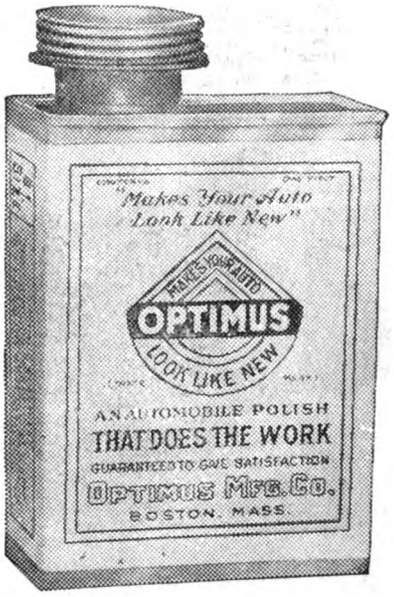
Carbon Remover.



NEW ERA FOOT ACCELERATOR FOR FORD CARS.



Line Carburetor Heater.



Optimus Auto Polish.

TRIUMPH MAGNETIC GAGE.

The Triumph magnetic gage is an indicator which may be applied to any shape tank, either portable or stationary, for indicating the amount of liquid therein. These gages are made for either pressure or gravity systems and the amount of pressure does not effect the gage. A hollow metal float, tested to 100 pounds pressure, is threaded upon a gun metal bronze ribbon, which is suspended from the top of the tube, and to which a permanent magnet is attached. The bronze ribbon passes through a tube in the centre of the float. As the float travels up and down inside the tube of the gage with the rise and fall of the fluid in the tank, it is turned by a spiral cut in the tube. This naturally causes the metal ribbon to revolve and turn the magnet, which exercises its power through the solid head of the gage, and turns the magnetic hand on the face of the dial. This construction permits a perfect sealing of the gage face to make the instrument fume, dust, moisture and air tight.

Manufactured by Boston Auto Gage Co., 8 Waltham St., Boston, Mass. When writing for quotations give dimensions of tank.

LINE CARBURETOR HEATER.

This is an ingenious device for using electricity to heat gasoline in a carburetor float chamber. Gasoline vaporizes more readily when the temperature is increased, which is the principle upon which the Line Carburetor Heater is constructed. The device is simply wrapped around the bowl of the carburetor and two wires are run to a six-volt battery through a switch. When the switch is closed the heat generated by the resistance coil in the device warms the gasoline in the carburetor.

Manufactured by Mechanical Utilities Corp., 5 North La Salle St., Chicago, Ill. Price, $3.

REAR SEAT WINDSHIELD.

The windshield shown in our illustration is designed for Ford cars and intended to protect the passengers on the rear seat from the dust and winds, from which the driver is protected by the dash windshield. The shield is made of heavy rubber cloth with transparent partitions, as illustrated, and fastens to top and front of back seat.

Manufactured by The J. P. Gordon Co., Columbus, O. Price, $6. Mention year of car when ordering.

Rear Seat Windshield.

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RIE NIE AUTO PATCH.

Something new in the way of tire patches is being marketed under the trade name Rie Nie Auto Patch. This patch is made up in a special way. A layer of cured rubber is placed between two layers of especially prepared raw rubber. One side is covered by a layer of fabric which adds to the strength and wearing qualities of the patch. This construction makes a four-ply patch, which may be applied without the use of special tools or heat. This patch is covered by a broad guarantee by the manufacturer, who says that the smallest puncture or the largest blow out may be mended satisfactorily.

Manufactured by Durkee Atwood Co., Minneapolis, Minn. Price for small size (36 square inches), 50 cents each; for large size (108 square inches), $1.

WHEEL PULLER.

The Mosco Floating Plunger wheel puller is made to fit 172 models of 32 popular cars. The special feature of this puller is the floating plunger, which slides in the pressure screw. When the wheel is stuck or frozen to an axle a tap of the hammer on the head of the plunger will generally loosen the wheel.

Manufactured by Motor Specialties Co., Waltham, Mass. Prices and catalogue upon application.

LEGALITE LENS.

Legalite lens is a scientific arrangement of panes of glass which keep the rays of light within 3½ feet of the ground and concentrates those rays so that the light is strongest where it is needed when driving. Legalite lens is made in ¼ inch sizes so as to fit any lamp and can be placed in the lamp in a few moments.

The distributors of the above lens also market Lubro Radiator Compound, a powder used for stopping leaks in radiators and cylinders, and magic rubber, which is a pure gum rubber in spongy form and is used for repairing tubes or tires. Magic rubber requires no heat in applying and in a few minutes dries as hard as original rubber. When dried it does not peel off.

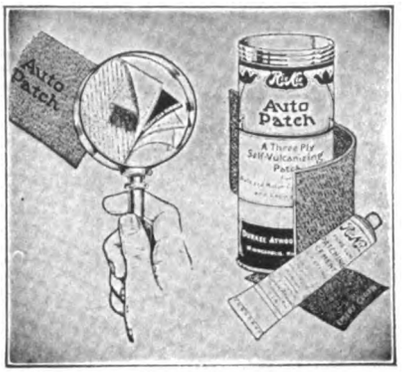
Marketed by De Lano & Harriman, 288 Columbus Ave., Boston, Mass. Prices and literature on request.

AUBURN VALVE LIFTERS.

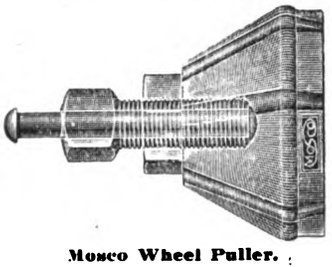
This is a so-called one-piece, self-adjusting valve spring lifter, made of malleable iron. The manufacturers claim that it cannot get out of order, as it has no hooks, springs or chains, and no separate pieces to become lost. It is made to fit all cars and is finished in black.

Manufactured by Auburn Ignition Mfg. Co., Auburn, N. Y. Price, 75 cents.

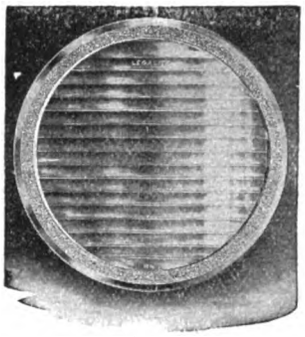
Auburn Valve Lifter.



Rie Nie Auto Patch.

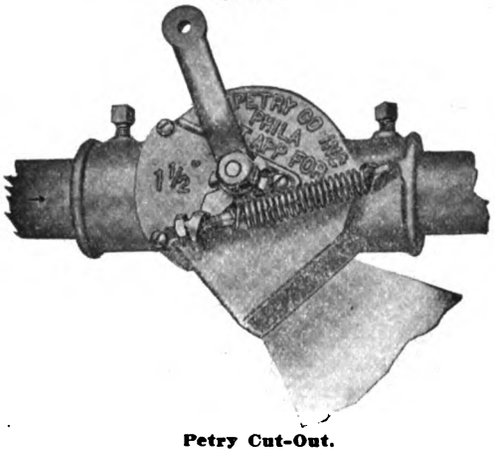


Mosco Wheel Puller.



Legalite Lens.

Dealers Display Stand Lighting System.



Petry Cut-Out.

JOINTLESS PISTON RINGS.

Jointless piston rings are designed to insure uniform radial pressure upon cylinder walls. Each ring consists of two pieces, circular in form, cut across their circumference like the ordinary type. The two ends of each piece are on opposite sides of the circumference and are slightly thinner than the rest of the ring so as to fit into a projection which extends from the back of its companion piece. When in place on the piston there is no opening directly or diagonally across the assembled ring. A feature of the jointless construction is the absence of exposed ends, as has been described above; the ends are inside the ring and do not touch the cylinder walls.

Manufactured by the Detroit Piston Ring Co., 53-57 Richmond Ave., Detroit, Mich. Sales branch at 20 E. Jackson Blvd., Chicago, Ill. Price, $1 each.

LIGHTING SYSTEM.

The dealers' display stand shown in the illustration is intended as a demonstration board for Genolite, Dynolite and Constolite, three lighting systems. The board with all necessary brackets and attachments is furnished at same price as regular equipment and can be dismantled at any time and the systems installed upon a car.

Genolite system type C consists of a generator, a storage battery, two electric side lamps, electric tail lamp, headlight light control, operated from switch on steering post, with all wiring and connections. Type D has in addition to the equipment of C a windshield spotlight.

Dynolite consists of windshield spotlight with regulator, switch and wiring, and designed to attach to the Ford car magneto.

Constolite consists of bulbs for headlights, regulator, dimming switch and wiring, and is designed to be attached to the Ford car magneto.

Made by the Detroit Starter Co., Detroit, Mich. Retail price of type C Genolite, $29.85; Type D, $31.85; Dynolite, $6.85; Constolite, $4.85.

PETRY CUT-OUT.

The Petry cut-out is designed on scientific lines and is placed in the exhaust line between the engine and the muffler. The gas in passing through it is deflected over the valve to a very slight extent. This valve is so arranged that it does not obstruct the free passage of gas to any extent and when it is opened the gas is deflected through an opening to the air at a slight angle. When in this position it prevents the passage of gas to the muffler. A feature of this cut-out is the adjustable valve lever, which may be placed in any position in a circle; another feature is the removable side. The valve may be taken out without detaching the cut-out from the exhaust connections.

Manufactured by N. A. Petry Co., Inc., Philadelphia, Pa. Prices from $3.50 for 1½ inch size to $4.50 for 2½ inch size.

J. M. SOOT-PROOF PLUG.

Our illustration shows the construction of the J. M. Soot-Proof spark plug, which the makers claim is not only soot proof, but also free from short circuiting troubles. The petticoat forms a chamber between the porcelain and the body of the shell and also between the porcelain and the electrode. Expanding gas in these two chambers is said to exert a scouring effect upon the porcelain and to prevent the accumulation of carbon deposit.

Manufactured by the H. W. Johns Manville Co., New York City. Price, 75 cents.

UNIVERSAL PULLER.

The Collison's Universal Puller is self-centering, working on the principle of a universal chuck. The jaws are either contracted or expanded to fit the work and when set are held rigidly in place. The puller is substantially built of drop forgings and steel castings and is guaranteed against imperfections in materials and workmanship. The puller complete has a capacity up to 17 inches and may be used for removing gears, flywheels, wrist pins, etc., or for straightening shafting.

Manufactured by George A. Collison. Burlington, Vt. Price complete with three sets of jaws, $20. Special proposition for jobbers and dealers.

FERROSTAT VACUUM BOTTLE.

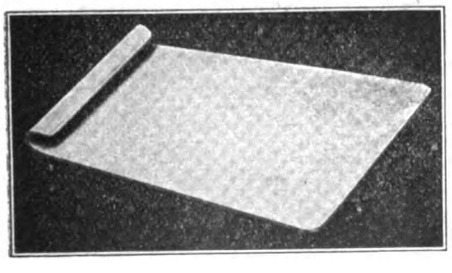
Our cut shows the construction of what the makers term an indestructible vacuum bottle. Ferrostat is constructed entirely of steel and has no removable parts except the cork and cup, and, therefore, there are no unsealed openings into which liquids may leak. All joints are solid welded. The interior surface has a highly glazed enamel finish, while the outside is finished in either nickel or rubber.

Manufactured by Stanley Insulating Co., Great Barrington, Mass. Prices range from $6 to $9.50 according to size and finish.

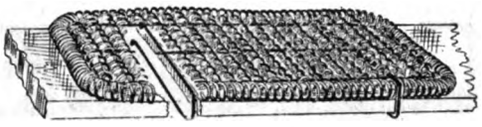
SHOVEL AND JACK BASE.

The combination shovel and jack base shown in the illustration is made of heavy galvanized steel nine by six inches and weighs 1½ pounds. It will be found very useful to clear a space for the jack and to stand the jack upon as a base.

Manufactured by the Laconia Car Co., 60 Congress St., Boston, Mass. Price, 50 cents.

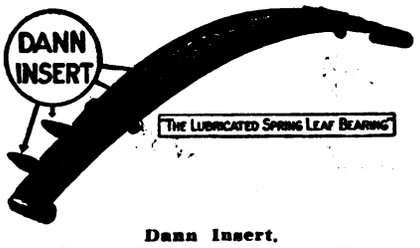


Shovel and Jack Base.



Running Board Mat.

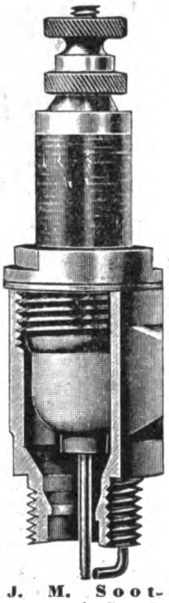
Robe Rail.



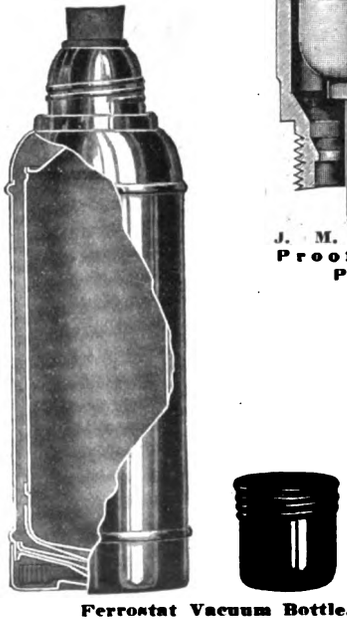
Dann Insert.

Victrolene.

Collison's Universal Puller



J. M. Soot-Proof Spark Plug.



Ferrostat Vacuum Bottle.

VICTROLENE.

Victrolene is a scientifically compounded cleaner and polisher for automobiles The manufacturers claim that it will remove all tar and road oil and restore the finish of the car to its original lustre; also that it will remove any rust that is on the nickel parts of the car. It may also be used to clean the leather upholstery and keep it soft and pliable.

Manufactured by Victrolene Co., 39 Pearl St. ,Boston. Prices from 25 cents for half pint can to $3 for one gallon can.

DANN INSERT.

The Dann Spring Insert is intended to lubricate and form bearing surface for the spring leaves in the same manner that the bearings of the engine work. It is a strip of perforated bronze, the perforations containing a specially prepared graphite, to be placed between the spring leaves. The Dann Products Co., the manufacturer, claim that it is a great help in reducing vibration.

Represented in New England by Harry B. Hartley, 243 Columbus Ave., Boston. Mass.

RUNNING BOARD MAT.

The Sanitary Wire Running Board Mat is made of galvanized steel wire, 9x18 inches dimensions, ⅞ inch thick. It clamps to the running board of the car and should last for years. Not only is it intended for removing dirt from the shoes, but also to insure a positive foot hold when getting in or out of the car A border around the mat affords a means for removing dirt, mud, etc., from the front of heel or side of shoe.

Manufactured by Sanitary Wire Door Mat Co., 1755 W. Van Buren St., Chicago. Ill. Price, $1.25 each.

ROBE RAIL.

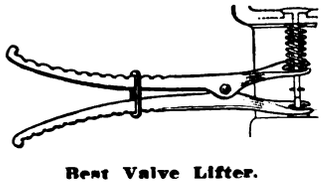
Our illustration shows a detachable robe rail which has just been placed upon the market. One end is detachable to facilitate placing of coat or robe in position. The centre is leather over cord and the ends are nickel plated. It is regularly furnished in 18-inch lengths; other lengths to order. Special size for Ford cars, 24 inches long.

Made by Ideal Brass Works, Indianapolis, Ind. Price, 75 cents each.

BEST VALVE LIFTER.

We illustrate here a handy, malleable iron, valve lifter, which the makers claim to be one of the best on the market. The holding ring is slipped up and down the handle for adjustments.

Manufactured by Fish-Best Co., Grand Rapids, Mich. Price, 50 cents.



Best Valve Lifter.

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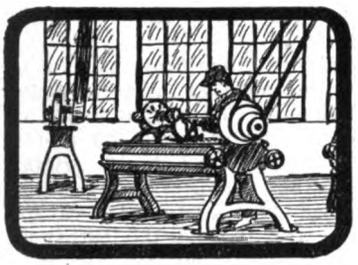
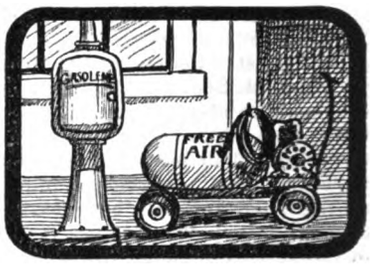


GARAGE EQUIPMENT



CYLINDER GRINDER.

A cylinder grinder is shown in our illustration, with which it is possible to grind holes from two inches to six inches in diameter and up to 18 inches in length. The equipment consists of two spindles for different sized holes and three grinding wheels of different sizes. The grinder has two speeds for grinder wheels, 4500 and 6800 revolutions per minute. The countershaft is equipped with tight and loose pulleys six inches in diameter for three-inch belt and is designed to run 600 revolutions per minute.

This machine has an automatic raising and lowering clutch and micrometer adjustment of grinder can be made instantly at any time. About one-half to one horsepower is required, depending upon the depth of cut taken. The table is 36 inches long by 24 inches wide and 24 inches high.

The makers cover the machine with a broad guarantee.

Manufactured by Pennypacker Mfg. Co., Los Angeles, Cal. Prices upon request.

OVERHEAD FOUNTAIN.

The Advance Overhead Fountain should prove a time and money saving device for every garage. The Advance washer consists of a hose arm six feet long swinging on a swivel joint at one end, thus making a circle of 12 feet in diameter. The swivel joint is hung in a ceiling socket to which is attached the water feed. A hose is attached to the hose arm, which is balanced by a counterweighted arm. When the hose is pulled downward the water is automatically turned on and when it is released or the hose arm pushed upward the water ceases to flow. Much time is saved by this automatically acting shut off.

Manufactured by Advance Mfg. Co., Franklin, Penn. Write for prices and terms.

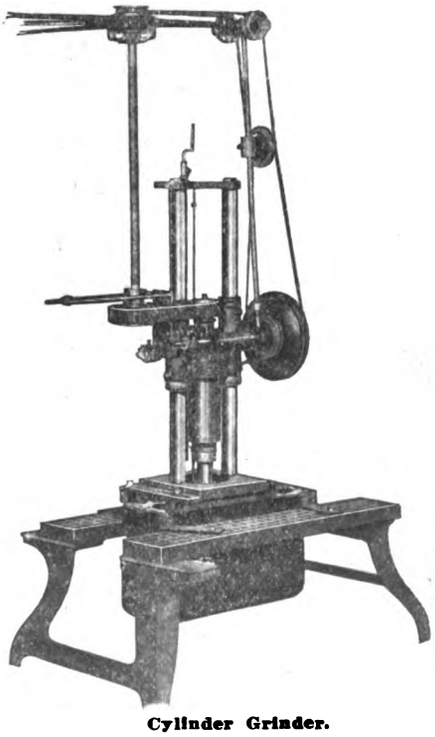
PORTABLE GREASE CABINET.

A very convenient and clean portable grease cabinet for use by garages, manufacturers, service stations and car owners is being marketed. The container has capacity for 20 pounds and delivers one-quarter pound to each stroke of the pump and passes nothing but grease or fluid. The shipping weight, including pump and five feet of hose with nozzle attached, is 14 pounds.

Made by the Townsan Auto Specialty Co., 822 Western Ave., Minneapolis, Minn. Prices on application.

Using Waterhouse Lead Burning Outfit for Storage Battery Work.

Portable Grease Cabinet.



Cylinder Grinder.

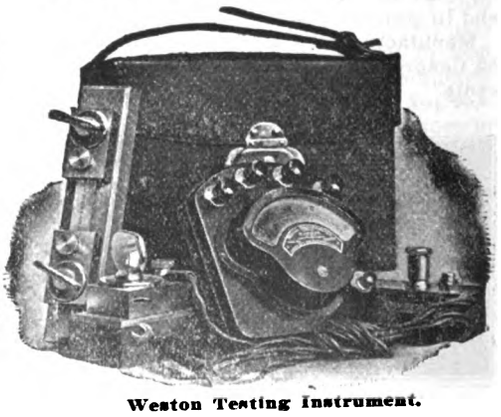
WELDING OUTFIT.

The Waterhouse Welding Outfit is something new in the welding field and should be an attractive proposition to the garage man for the reason that it combines a welding, carbon burning, battery working and cutting equipment. In order to do repair work on a storage battery a lead burning system is essential. The Waterhouse outfit not only provides for this work, but includes the other features of welding and carbon burning apparatus at a low initial cost.

Manufactured by Waterhouse Welding Co., 3 Pelham St., Boston, Mass. Prices upon application.

WESTON TESTING INSTRUMENT.

The Weston garage testing instrument is designed to indicate and help locate accurately and quickly the troubles to which electrical systems are liable. Among these are those attributable to deteriorated or run down batteries; short circuits or grounds at any point due to worn or defective insulation; defective lamp sockets; open circuits due to vibration, abrasion or loose lamps; leaks that result in continuous discharge of batteries; brush troubles in the motor or generators or worn commutators, etc. The Weston instrument is designed to detect these troubles and is reliable, permanent in calibration and generally serviceable. The instrument illustrated is the Weston model 280 voltammeter, with external shunts for ampere measurements. It is pocket size, has a uniform and legible scale, is quick in action and is shielded from disturbing influences of external magnetic fields. With its six different ranges (300, 30 and three amperes and 30 and three volts and 100 millivolts) it is actually six instruments in one. The price of the instrument is exceedingly low for such equipment and the special



Weston Testing Instrument.

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inducements offered by the manufacturer will interest every progressive member of the trade.

Made by the Weston Electrical Instrument Company, 103 Weston avenue, Newark, N. J. Write for illustrated literature and prices.

MILLER AUTO HOIST.

The Miller auto hoist simplifies the lifting problems that arise in every shop where there are only a few employees. The frame of the hoist is seven feet high, eight feet wide and will support 6500 pounds. It is constructed of angle steel, rigidly braced and hot riveted, and mounted on swivel castors.

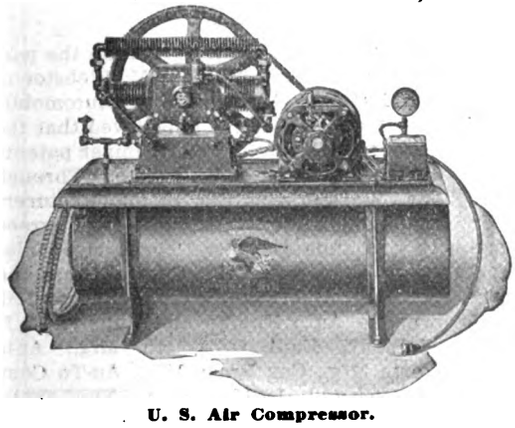
The load is carried on frame from sleeves which slide to give desired spread by yoke and plate. The hoist is taken up by means of a handle acting through a series of gears. The lowering arrangement is controlled by a friction brake, which permits the load to be lowered as slowly as desired. The hoist does not interfere with free access to the working parts of the car.

Manufactured by Portable Tool Sales Co., Endicott building, Buffalo, N. Y. Prices upon application.

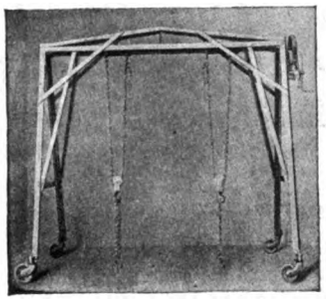
THE STAHL RECTIFIER.

Alternating current cannot be used for charging storage batteries; it must be converted to direct current before it can be used. This is the function of the Stahl rectifier, which is a low priced rectifying apparatus for garage work. The essential features are a small synchronous motor of special design operating from the alternating current line. This turns a shaft provided with collector rings and a direct current commutator. Alternating current is brought to the collector rings through brushes, taken from the rings and passed to the commutator and finally taken from the commutator as direct current by another set of brushes. The switchboard, mounted on the same frame as the motor, is provided with all the necessary switches, regulating devices, measuring instruments and automatic features. To charge a battery it is only necessary to insert a cable plug and close a switch.

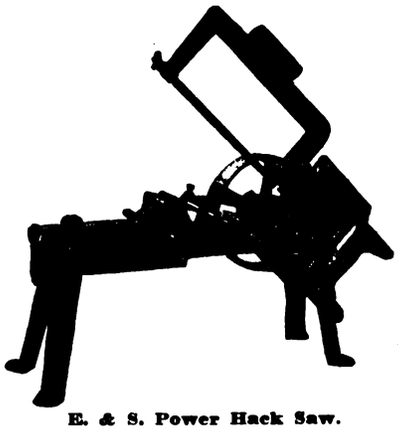
This machine is made in two styles.



U. S. Air Compressor.

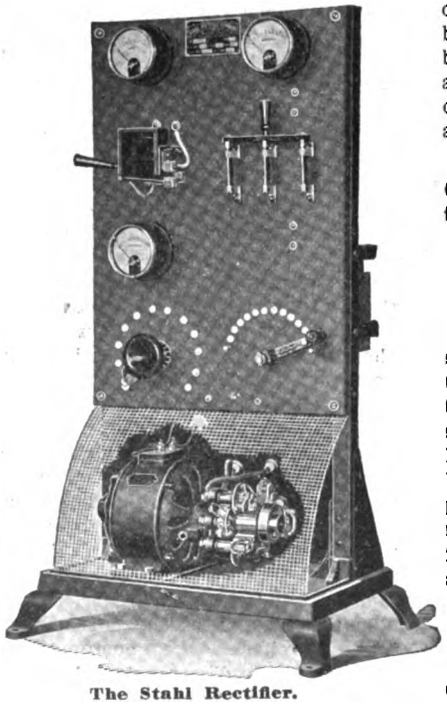


Miller Auto Hoist.



E. & S. Power Hack Saw.

Dover Truck Funnel.



The Stahl Rectifier.

One is for a single circuit. The other, which is for two circuit work, is illustrated in our cut.

Manufactured by the Stahl Rectifier Co., 536-538 South Clark St., Chicago, Ill. Prices upon application.

POWER HACK SAW.

The new E. & S. Power Hack Saw is a high speed machine with a sawing capacity of 4x4 inches. The saw arm takes a nine-inch blade and is driven by a crank working between V bearings and is equipped with a sliding weight to regulate the pressure to secure the best results from the saw blade. It has an automatic stop and is driven by a 10x2 crown pulley, or a crank can be furnished for hand driving.

Manufactured by Ellis-Smith Mfg. Co., Inc., 216 Niagara St., Buffalo, N. Y. Price, $18. Write for special trade discount.

AIR COMPRESSOR.

The De Luxe H 34 U. S. two stage automatic air compressor has many exclusive features that, in the opinion of the manufacturers, make it an efficient and complete air plant. The air is drawn into a large area cylinder through a special intake silencer device and is compressed to 40 pounds, after which it is delivered to a smaller diameter high pressure cylinder through an air cooled pipe leading from the head of the larger cylinder to the head of the smaller. The air is forced by a smaller piston through a special check valve to a filtering trap, where foreign matter and oil is removed, and thence through an automatic, adjustable safety valve to the storage tank. Pressure control is by an automatic valve, which stops the engine when a predetermined pressure is reached and starts it again when the pressure falls below a given mark. The cylinders and crank case of the compressor are cast en block and the whole apparatus is driven by an electric motor that is mounted on a plate attached to the tank. The machine is compact and ready to be operated when received from the factory.

Manufactured by the United States Air Compressor Co., Cleveland, O. Prices furnished on application.

DOVER TRUCK FUNNEL.

Designed to meet the demand for a special heavy truck funnel in the garage, the Dover truck funnel deserves attention. This funnel is made of very heavy steel and galvanized. The spout is very large and seamed to the body instead of being soldered. The spout and lower part of the body is beaded so that it will not become air bound in any size opening. It is fitted with fine brass strainers and also with a hoop to hold chamois.

Manufactured by Dover Stamping and Manufacturing Co., Cambridge, Mass. Price for four quarts, $1.25; for eight quarts, $1.50.

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Sermon in Clever Credit File

A $10 Charge Slip Is As Important as a $10 Bill, and Is Much More Apt to Be Lost

By DONALD R. DONLEY, Chicago.

ONE of the cleverest little business sermons that I have seen for some time consists of two pictures.

One picture shows a bill hook on which hangs a lot of $5 and $10 bills, with the wording under it:

"You wouldn't take care of your money in this way."

The other picture shows a similar bill hook hung full of charge and C. O. D. bills. Under it is the legend:

"Why do you keep your valuable charge records like this?"

The more you think of these pictures the more you recognize the truth of the sermon preached.

Inventive genius has provided modern means for safeguarding a merchant's coin and currency, even to the point of recording each transaction of each clerk who has access to the cash register.

But, until now, the still larger leaks that come from carelessness in handling charge accounts have not been adequately provided against.

A charge slip for $10 against a customer is worth $10, because, if the evidence of indebtedness is lost, the chances are that the money will be lost.

Yet merchants and small manufacturers who sell on credit are woefully careless with their charge business.

Why is it that, of two merchants with apparently equal prospects of success and equally equipped with brains and business experience, one builds up a good business and makes money, while the other, after struggling along for months or maybe years, fails?

My experience as a banker supplies the answer, that in almost every case where an honest, experienced, industrious merchant fails it is because he robs himself of his profits through lax methods of handling his charge accounts. Indeed, it is almost axiomatic that any merchant, to prosper, must be careful with his credit business.

In making commercial loans the first questions I ask an applicant for a loan concern his charge accounts. If he can answer me at once, I know that he is in close touch with his business, deserves consideration and is entitled to a hearing as he at least knows what he is talking about.

The merchant who is satisfied with approximate totals—his own, or his bookkeeper's—is a poor risk and invariably on checking up a failure the receivers find the great majority of such credit accounts to be worthless.

A Typical Case.

I remember one case of a merchant in a western town who was reputed wealthy but who suddenly failed, and when the receivers went through his books they found $85,000 of worthless accounts which the merchant had been carrying as good and collectable.

These losses had two principal causes: Credit risks that were bad from the start and risks that may have been good originally, but were allowed to lie so long that they became uncollectable for various reasons.

How much more that merchant lost by forgetting to charge altogether, nobody will ever know.

And no one will ever arrive at even an approximate estimate of what it cost him to keep his charge slips on spindles on an open desk, where they could be tampered with or destroyed either by debtor customers or tempted clerks.

A Remedy Is at Hand.

Now a new credit file that I have just seen will put a stop to all three of these serious forms of leaks.

It really takes the place of both a day book and ledger, and the only "posting" that is done is the writing of the charge slip, of which the customer gets the carbon copy, and the filing of the original copy in this unique device.

The file is divided into two compartments, an open one in front, and, back of that, a locked compartment with a plate glass top.

The act of pulling forward the vertical guides in the front compartment does three things:

1. It rings a bell.
2. It registers a serial number.
3. It opens the corresponding guides in the locked file so that the clerk can look through the glass top and see the previous charge slip of the customer, which is filed in such a way that the name and the total amount of indebtedness are exposed.

The clerk files the original sales slip under the customer's name in the front or day book compartment, and each night the proprietor or his delegated authority unlocks the glass covered rear compartment and transfers the daily charges to the proper locations in the permanent, or "ledger" file.

Does Many Useful Things.

The information locked under glass serves two purposes: First, a private mark, made by the proprietor or credit man, may tell the clerk that no further credit should be extended to that customer without his personal O. K.

Second, the clerk enters on the customer's bill the amount carried forward plus the amount of the customer's current purchase, the customer being handed the duplicate sales slip embodying this information.

To my mind the major function of this new credit file is to compel the filing of all charge and C. O. D. slips in a safe place where they cannot be mislaid, altered or destroyed.

Equally important is the fact that this file shows the proprietor of any business in a graphic way, each evening, exactly the extent and condition of his credit business.

Prime Causes of Failure.

My experience as a banker and public accountant convince me that 50 per cent. of the merchants who fail, fail through extending more credit than their capital warrants.

They are blindly ignorant of the fact that far too many of their charge customers are not worthy of the credit extended. Careless habits of bookkeeping and filing are fatal to any business.

This new credit file not only tells them the general condition of their credit business, but the actual status of each charge or C. O. D. account, as well as the amounts paid on account each day by each customer.

HYATT ISSUES BOOK ON LOCATION OF BEARINGS.

The Hyatt Roller Bearing Co., Detroit, Mich., has issued a booklet of 100 pages, containing detailed information on the sizes and location of Hyatt bearings in every motor car ever manufactured. These books have been distributed among the branches of the Bearings Service Co. of Detroit, which is the authorized service representative for the Hyatt company, as well as the Timken and New Departure companies.

"From the first single cylinder to the latest Twin Six, every motor car that has contained a Hyatt roller bearing is listed in this catalogue," says A. K. Hebner, general manager of the Bearings Service Co. "Each bearing in each car is located, numbered and priced. When an automobile owner comes to any one of our service branches and wants a bearing, we can tell at once the exact size of the bearing he needs. As every branch carries a complete stock of bearings, we are able to supply his wants at a moment's notice."

BUMPER MANUFACTURERS EXCHANGE PATENT RIGHTS.

As the result of meditation on the part of Commissioner William M. Webster of the National Association of Automobile Accessory Jobbers, it is believed that the entangling litigation over bumper patents has been ended for all time. Through Mr. Webster's efforts 10 manufacturers of bumpers for automobiles have agreed to exchange patents. These companies are: The Gemco Mfg., Central Brass and Fixture, American Brass Foundry, Milwaukee Auto Engine and Supply, L. P. Halliday, Emil Grossman Mfg., Auto Parts Mfg., Cox Brass Mfg., Au-To Compressor and J. H. Sager. This agreement effects some 20 patents.

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SPECIFICATIONS

1917

GASOLINE MOTOR TRUCKS

The Largest and Most Comprehensive Compilation of Practical Data of American Freight-Carrying Automobiles Ever Compiled

Reproduced from The MOTOR TRUCK, February 1917, Issue

These data have been carefully verified and corrected and will be published in two installments, the first of which appears in this number. The second installment, which will include the electric and chassis conversion and adapter units, will be published in the April edition.

The May issue of this magazine will present the specifications of American Agricultural and Industrial Tractors.

In the February number of the Accessory and Garage Journal complete specifications of American built pleasure automobiles, corrected to date, were published. Copies of this edition are obtainable by addressing the

Accessory & Garage Journal

Single Copies, $.20 ***Yearly Subscription, $2.00***

Times Building, ***Pawtucket, R. I.***

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AMERICAN MANUFACTURERS OF 1917 GASOLINE WAGONS, TRUCKS AND TRACTORS.

The Specifications of the Vehicles in Bold Face Type Are Included in This Issue.

A. & B	American and British Manufacturing Co.,	Providence, R. I.
A. & R	Abendroth & Root Manfg. Co.,	Newburgh, N. Y.
Acason	Acason Motor Truck Co.,	Detroit, Mich.
Acme	Cadillac Auto Truck Co.,	Cadillac, Mich.
Alamo	Alamo Manufacturing Co.,	Hillsdale, Mich.
Allis-Chalmers	Allis-Chalmers Manufacturing Co.,	Milwaukee, Wis.
American	American **Motor Truck Co.**	Hartford, Conn.
Argo	Argo Motor Co.,	Jackson, Mich.
Armleder	O. Armleder Co.,	Cincinnati, O.
Atlas	Martin Truck & Body Corp.,	York, Pa.
Atterbury	Atterbury Motor Car Co.,	Buffalo, N. Y.
Autocar	Autocar Co.,	Ardmore, Pa.
Auto Truck	Auto Truck Co.,	Bangor, Pa.
Available	Available Truck Co.,	Chicago, Ill.
Avery	Avery Co.,	Peoria, Ill.
Barker	C L. Barker Factory,	Norwalk, Conn.
Bauer	Bauer Machine Works Co.,	Kansas City, Mo.
Beech Creek	Beech Creek Truck and Auto Co.,	Beech Creek, Pa.
Bell	Bell Motor Car Co.,	York, Pa.
Bessemer	Bessemer Motor Truck Co.,	Grove City, Pa.
Bethlehem	Bethlehem **Motor Corp.,**	Allentown, Pa.
Bimel	Bimel Buggy Co.,	Sidney, O.
Blair	Blair Motor Truck Co.,	Newark, O.
Board	B. F. Board Motor Truck Co.,	Alexandria, Va.
Bollstrom	Bollstrom Products Sales Co.,	Battle Creek, Mich.
Bourne	Bourne Magnetic Truck Co.,	Philadelphia, Pa.
Brennan	Brennan Manufacturing Co.,	Syracuse, N. Y.
Brinton	Brinton Motor Truck Co.,	Philadelphia, Pa.
Briscoe	Briscoe Motor Co.,	Jackson, Mich.
Brockway	Brockway Motor Wagon Co.,	Cortland, N. Y.
Brown	Brown Carriage Co.,	Cincinnati, O.
Boyd	Jas. Boyd & Bro., Inc.,	Philadelphia, Pa.
Bucklen	H. E. Bucklen, Jr., Motor Truck Co.,	Elkhart, Ind.
Buckley-Rider	Buckley-Rider Tractor Co.,	Los Angeles, Cal.
Buick	Buick Motor Co.,	Flint, Mich.
Burford	H. G. Burford Co.,	Fremont, O.
Carlton	Carlton Hill Motor Car Co.,	Rutherford, N. J.
Carroll	Carroll Motor Car Co.,	Strassburg, Pa.
Casey	F. A. Casey,	Billerica, Mass.
Chadwick	Chadwick Engineering Works,	Pottstown, Pa.
Champion	Champion Motors Co.,	Fulton, Ill.
Champion	Champion Wagon Co.,	Owego, N. Y.
Chase	Chase Motor Truck Co.,	Syracuse, N. Y.
Coleman	Coleman Carriage and Harness Co.,	Illion, N. Y.
Collier	Collier Motor Truck Co.,	Painesville, O.
Columbia	Columbia Motor Truck and Trailer Co.,	Pontiac, Mich.
Comet	Comet Motor Truck Co.,	Rockford, Ill.
Commerce	Commerce Motor Car Co.,	Detroit, Mich
Concord	Abbott & Downing Co.,	Concord, N. H.
Continental (C)	Continental Motor Truck Co.,	Chicago, Ill.
Continental (S)	Continental Truck Manufacturing Co.,	Superior, Wis.
Corbitt	Corbitt Motor Truck Co.,	Henderson, N. C.
Corliss	Corliss Motor Truck Co.,	Corliss, Wis.
Couple-Gear	Couple-Gear Freight Wheel Co.,	Grand Rapids, Mich.
Crawford	Crawford Automobile Co.,	Hagerstown, Md.
Croce	Croce Automobile Co.,	Asbury Park, N. J.
Crowther	Crowther Motors Corp.,	Philadelphia, Pa.
Crown	Crown Commercial Car Co.,	North Milwaukee, Wis.
Curtis	Pittsburg Machine Tool Co.,	Braddock, Pa.
Dain	Dain Manufacturing Co.,	Ottumwa, Ia.
Dart	Dart Motor Truck Co.,	Waterloo, Ia.
Day-Elder	Day-Elder Motors Co.,	Newark, N. J.
Dayton	Dayton Motor Truck Co.,	Dayton, O.
DeKalb	DeKalb Wagon Co.,	DeKalb, Ill.
Denby	Denby Motor Truck Co.,	Detroit, Mich.
Denmo	Denneen Motor Co.,	Cleveland, O.
Detroit	Detroit Commercial Car Co.,	Pontiac, Mich.
Diamond T	Diamond-T Motor Car Co.,	Chicago, Ill.
Dispatch	Dispatch Motor Car Co.,	Minneapolis, Minn.
Doane	Doane Motor Truck Co.,	San Francisco, Cal.
Dominion Tractor	Dominion Motor Truck Co.,	Detroit, Mich.
Kopp	Kopp Motor Truck Co.,	Buffalo, N. Y.
Krebs	Krebs Commercial Car Co.,	Clyde, O.
Kressler	Kressler Auto Co.,	Fostoria, O.
Lambert	Buckeye Manufacturing Co.,	Anderson, Ind.
Landshaft	William Landshaft & Sons,	Chicago, Ill.
Lane	Lane Motor Truck Co.,	Kalamazoo, Mich
Lange	Lange Motor Truck Co.,	Pittsburg, Pa.
Lawson	Lawson Manufacturing Co.,	Pittsburg, Pa.
Larrabee	Larrabee-Deyo Motor Truck Co.,	Binghamton, N. Y.
Lawson	Lawson Mfg. Co.,	Pittsburg, Pa.
Lenox	Lenox Motor Car Co.,	Boston, Mass.
Lescina	Lescina Automobile Co.,	Newark, N. J.
Lincoln	Lincoln Motor Truck Co.,	Detroit, Mich.
Lippard-Stewart	Lippard-Stewart Motor Car Co.,	Buffalo, N. Y.
Little Giant	Chicago Pneumatic Tool Co.,	Chicago, Ill.
Lombard	Lombard Auto-Tractor-Truck Corp.,	New York, N. Y.
Lord Baltimore	Lord Baltimore Motor Truck Co.,	Baltimore, Md.
Lovelace	Lovelace Engineering Co.,	New Brunswick, N. J.
Maccar	Maccar Truck Co.,	Scranton, Pa.
Mack	International Motor Co.,	New York, N. Y.
Manly	Manly Motor Corp.,	Chicago, Ill.
Maxwell	Maxwell Motor Co.,	Detroit, Mich.
Menominee	Menominee Motor Truck Co.,	Menominee, Mich.
Mercury	Mercury Manufacturing Co.,	Chicago, Ill.
Mercury-Bully Tractor	Mercury Manufacturing Co.,	Chicago, Ill.
Metropolitan	Metropolitan Motors, Inc.,	Bronx, N. Y.
Mansur	Mansur Motors Co.,	Haverhill, Mass.
Metz	Metz Company.,	Waltham, Mass.
Modern	Bowling Green Motor Car Co.,	Bowling Green, O.
Mogul	Mogul Motor Truck Co.,	St. Louis, Mo.
Mohawk	Mohawk Motor Truck Co.,	Ravenna, O.
Monitor	Monitor Automobile Works	Janesville, Wis.
Moon	Jos. W. Moon Buggy Co.,	St. Louis, Mo.
Moore	Pacific Products Co.,	Torrence, Cal.
Moreland	Moreland Motor Truck Co.,	Los Angeles, Cal.
Morse	Morse Cyclecar Co.,	Pittsburg, Pa.
Morton	Morton Truck and Tractor Co.,	Harrisburg, Pa.
Nelson & LeMoon	Nelson & LeMoon,	Chicago, Ill.
Netco	New England Truck Co.,	Fitchburg, Mass.
New London	New London Motor Truck Co.,	New London, Conn.
New York	Tegetmeier & Reipe,	New York, N. Y.
Niles	Niles Car and Manufacturing Co.,	Niles, O.
Old Hickory	Kentucky Wagon Manufacturing Co.,	Louisville, Ky.
Old Reliable	Old Reliable Motor Truck Co.,	Chicago, Ill.
Overland	Willys-Overland Co.,	Toledo, O.
Packard	Packard Motor Car Co.,	Detroit, Mich.
Packet	Packet M. C. Manufacturing Co.,	Minneapolis, Minn.
Page	Page Buggy Co.,	Marshall, Mich.
Palmer	Palmer-Meyer Motor Car Co.,	St. Louis, Mo.
Palmer-Moore	Palmer-Moore Co.,	Syracuse, N. Y.
Pauiding	Anchor Auto Co.,	St. Louis, Mo.
Peerless	Peerless Motor Truck and Corporation,	Cleveland, O.
Pennsy	Pennsy Motor Car Co.,	York, Pa.
Phoenix Centiped	Phoenix Manufacturing Co.,	Eau Claire, Wis.
Pierce-Arrow	Pierce-Arrow Motor Car Co.,	Buffalo, N. Y.
Piercy	Hub Motor Truck Co.,	Columbus, O.
Piggins	Piggins Bros. Motor Truck Co.,	Racine, Wis.
Pullman	Pullman Motor Car Co.,	York, Pa.
Pull-More	Pull-More Motor Co.,	Newcastle, Pa.
Rainier	Rainier Motor Corp.,	New York City.
Reo	Reo Motor Truck Co.,	Lansing, Mich.
Republic	Republic Motor Truck Co.,	Alma, Mich.
Riker	Locomobile Company of America.	Bridgeport, Conn.
Robinson	Golden West Motors Co.,	Sacramento, Cal.
Rockford	Rockford Motor Truck Co.,	Rockford, Ill.

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Dornfield	John Dornfield Co.,	Watertown, Wis.
Dorris	Dorris Motor Car Co.,	St. Louis, Mo.
Duffy	Duffy Bros. Motor Truck Co.,	San Francisco, Cal.
Duplex	Duplex Truck Co.,	Lansing, Mich.
Durocar	Amalgamated Motors Corp.,	Alhambra, Cal.
Duryea	Duryea Motors, Inc.,	Philadelphia, Pa.
Eastern	Eastern Power Truck Co.,	Providence, R. I.
Economy	Economy Motor Co.,	Tiffin, O.
Elmira	Elmira Commercial Car Co.,	Elmira, N. Y.
Ellsworth	Mills-Ellsworth Co.,	Keokuk, Ia.
Erie	Erie Motor Truck Manufacturing Co.,	Erie, Pa.
Fargo	Fargo Motor Car Co.,	Chicago, Ill.
Fawick	Fawick Motor Car Co.,	Sioux Falls, S. D.
Federal	Federal Motor Truck Co.,	Detroit, Mich.
Forschler	Forschler Motor Truck Mfg. Co., Inc.,	New Orleans, La.
Four-Drive	Four-Drive Tractor Co.,	Big Rapids, Mich.
Franklin	Franklin Commercial Truck Co.,	Franklin, Pa.
Ford	Ford Motor Co.,	Detroit, Mich.
Frome	R. L. Frome Manfacturing Co.,	Sheboygan, Wis.
Fulton	Fulton Motor Truck Co.,	Farmingdale, L. I., N. Y.
F. W. D	Four Wheel Drive Auto Co.,	Clintonville, Wis.
Gabriel	Gabriel Motor Truck Co.,	Cleveland, O.
Garford	Garford Motor Truck Co.,	Lima, O.
Gary	Gary Motor Truck Co.,	Gary, Ind.
G. A. Schacht	G. A. Schacht Motor Truck Co.,	Cincinnati, O.
Gay	S. G. Gay Co.,	Ottawa, Ill.
Geneva	Geneva Wagon Co.,	Geneva, N. Y.
Gersix	Gerlinger Motor Car Co.,	Portland, Ore.
G-M-C	General Motors Truck Co.,	Pontiac, Mich.
Gramm-Bernstein	Gramm-Bernstein Motor Truck Co.,	Lima, O.
Great Southern	Great Southern Automobile Co.,	Birmingham, Ala.
G-V-Mercedes	General Vehicle Co.,	Long Island City, N. Y.
Hahn	Hahn Motor Truck Co.,	Hamburg, Pa.
Hall	Lewis-Hall Iron Works,	Detroit, Mich.
Handy Wagon	Auburn Motor Chassis Co.,	Auburn, Ind.
Hanger	C. F. Hanger Co.,	Cleveland, O.
Hannibal	Hannibal Motor Car Co.,	Hannibal, Mo.
Harrison	Robert Harrison Co.,	South Boston, Mass.
Harvey	Harvey Motor Truck Co.,	Harvey, Ill.
Haughton	Haughton Sulky Co.,	Marion, O.
Hawkeye	Hawkeye Mfg. & Repair Co.,	Sioux City, Ia.
Henderson	Henderson Bros.,	North Cambridge, Mass.
Hercules (S. B)	Hercules Motor Truck Co.,	South Boston, Mass.
Hewitt-Ludlow	Hewitt-Ludlow Auto Co.,	San Francisco, Cal.
Highgrade	Highgrade Motors Co.,	Grand Rapids, Mich.
Hoadley	Hoadley Bros.,	Gosport, Ind.
Hoover	Hoover Wagon Co.,	York, Pa.
Horner	Detroit-Wyandotte Motor Co.,	Wyandotte, Mich.
Howard	Howard Motor Truck Co.,	Boston, Mass.
Hurlburt	Hurlburt Motor Truck Co.,	New York, N. Y.
I-H-C	International Harvester Co.,	Akron, O.
Independent	Independent Motors Corp.,	Port Huron, Mich.
Indiana	Indiana Motor Truck Co.,	Marion, Ind.
Inter State	Inter State Motor Co.,	Muncie, Ind.
Iowa	Iowa Motor Truck Co.,	Ottumwa, Ia.
Jeffery	Nash Motors Co.,	Kenosha, Wis.
Kanawha	Kanawha Auto Truck Co.,	Charleston, W. Va.
Kearns	Kearns Motor Car Co.,	Beavertown, Pa.
Kelly-Springfield	Kelly-Springfield Motor Truck Co.,	Springfield, O.
King	A. B. King Manufacturing Co.,	Kingston, N. Y.
KisselKar	Kissel Motor Car Co.,	Hartford, Wis.
Kleiber	Kleiber & Co., Inc.,	San Francisco, Cal.
Knickerbocker	Knickerbocker Motor Truck Co.,	New York, N. Y.
Knox Tractor	Knox Motors Associates,	Springfield, Mass.
Koehler	H. J. Koehler S. G. Co.,	Newark, N. J.
Koenig & Luhrs	Koenig & Luhrs Wagon Co.,	Quincy, Ill.
Rocco	Rocco Motor Co.,	Hannibal, Mo.
Rowe	Rowe Motor Co.,	Dowlingtown, Pa.
Royal	Royal Motor Truck Co.,	New York, N. Y.
R-S	Reading-Standard Co.,	Reading, Pa.
Rush	Rush Delivery Car Co.,	Philadelphia, Pa.
Sandow	Sandow Truck Co.,	Chicago, Ill.
Sanford	Sanford Motor Truck Co.,	Syracuse, N. Y.
Saurer	International Motor Co.,	New York, N. Y.
Sawyer-Massey	Sawyer-Massey Co., Ltd.,	Hamilton, Ont., Canada.
Saxon	Saxon Motor Co.,	Detroit, Mich.
Schleicher	Schleicher Motor Vehicle Co.,	New York, N. Y.
Schoepfin	L. G. Schoepfin Co.,	Buffalo, N. Y.
Selden	Selden Truck Sales Co.,	Rochester, N. Y.
Service	Service Motor Truck Co.,	Wabash, Ind.
Sheridan	Sheridan Commercial Car Co.,	Harvey, Ill.
Siebert	Siebert Motor Truck Co.,	Toledo, O.
Signal	Signal Motor Truck Co.,	Detroit, Mich.
Sphinx	Sphinx Motor Car Co.,	York, Pa.
Standard	Standard Motor Truck Co.,	Detroit, Mich.
Standard Tractor	Standard Tractor Co.,	Brooklyn, N. Y.
Star	Star Motor Co.,	Cincinnati, O.
States	States Motor Co.,	Kalamazoo, Mich.
Steele	W. M. Steele,	Worcester, Mass.
Stegeman	Stegeman Motor Car Co.,	Milwaukee, Wis.
Sterling	Sterling Motor Truck Co.,	Milwaukee, Wis.
Stewart (B)	Stewart Motor Corporation.	Buffalo, N. Y.
Stewart (C)	Stewart Iron Works,	Covington, Ky.
Studebaker	Studebaker Corporation,	Detroit, Mich.
Sullivan	Sullivan Motor Truck Co.,	Rochester, N. Y.
Superior	E. G. Willingham's Sons,	Atlanta, Ga.
Thomas	Thomas Auto Truck Co.,	New York City.
Tiffin	Tiffin Wagon Co.,	Tiffin, O.
Toeppner	Toeppner Bros.,	Bay City, Mich.
Tower	Tower Motor Truck Co.,	Greenville, Mich.
Trabold	Trabold Motor Manufacturing Co.,	Johnstown, Pa.
Transport Tractor	Transport Tractor Co.,	Long Island City, N. Y.
Trumbull	Trumbull Motor Car Co.,	Bridgeport, Conn.
Tulsa	Tulsa Automobile & Manufacturing Co.,	Tulsa, Okla.
Union	Union Motor Truck Co.,	Bay City, Mich.
United	United Motor Truck Co.,	Grand Rapids, Mich.
United States	United States Motor Truck Co.,	Cincinnati, O.
Universal	Universal Service Co.,	Detroit, Mich.
Van Winkle	Van Winkle Motor Truck Co.,	Atlanta, Ga.
Velie	Velie Motor Vehicle Co.,	Moline, Ill.
Viall	Viall Motor Car Co.,	Chicago, Ill.
Vim	Vim Motor Truck Co.,	Philadelphia, Pa.
Voltz	Voltz Bros.,	Chicago, Ill.
Walter	Walter Motor Truck Co.,	New York, N. Y.
Ware	Twin City Four Wheel Drive Co	St. Paul, Minn.
Warren	Warren Motor Truck Co.,	Warren, O.
Washington	Washington Motor Car Co.,	Hyattsville, Md.
Watson	Watson Wagon Co.,	Canastota, N. Y.
Weier-Smith	Weier-Smith Truck Co.,	Birmingham, Mich.
West Coast	West Coast Wagon Co.,	Tacoma, Wash.
Western	Western Automobile Co.,	Seattle, Wash.
White	White Motor Co.,	Cleveland, O.
Wichita	Wichita Falls Motor Co.,	Wichita Falls, Tex.
Wilcox	H. E. Wilcox Motor Co.,	Minneapolis, Minn.
Wilson	J. C. Wilson Co.,	Detroit, Mich.
Winther	Winther Motor Truck Co.,	Kenosha, Wis.
Wisconsin	Myers Machine Co.,	Sheboygan, Wis.
Witt-Will	Witt-Will Co.,	Washington, D. C.
Wolverine	Wolverine-Detroit Motor Co.,	Detroit, Mich.
Zeitler & Lamson	Lamson Truck & Tractor Co.,	Chicago, Ill.
Zimmerman	Zimmerman Manufacturing Co.,	Auburn, Ind.

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MOTOR TRUCK MODELS, CAPACITIES AND PRICES

Alphabetical Arrangement of the Manufacturers and Indices of the Pages on Which the Specifications of Their Products Can Be Found.

Acason Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
3	4,000	.....	.....	84
—	7,000	.....	.....	91

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Model	Cap.	Chas. Price	Comp.	Page
A	14,000	.....	.....	97

American & British Mfg. Co., Prov., R. I.

Model	Cap.	Chas. Price	Comp.	Page
.	6,000	.....	.....	90
6 J	10,000	.....	.....	94

Anchor Auto Co., St. Louis, Mo.

Model	Cap.	Chas. Price	Comp.	Page
D 1	1,500	$975	.....	78
G G 1	2,000	1,300	.....	81
E E 1	3,000	1,600	.....	82
H 1	4,000	1,950	.....	87

O. Armleder Co., Cincinnati, O.

Model	Cap.	Chas. Price	Comp.	Page
H W	4,000	$2,800	.....	84
K W	7,000	3,500	.....	91

Atterbury Motor Car Co., Buffalo, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
4 B	2,000	$1,875	.....	79
4 R	3,000	2,075	.....	82
4 C	4,000	2,575	.....	84
4 D	7,000	3,375	.....	91
7 E	10,000	4,375	.....	94

Autocar Company, Ardmore, Penn.

Model	Cap.	Chas. Price	Comp.	Page
21 F	4,000	$1,650	.....	84

Auto Truck Co., Bangor, Pa.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,250	.....	79

Available Truck Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,700	.....	79
B	4,000	2,250	.....	84
.	7,000	3,300	.....	91
6	10,000	4,400	.....	94

Avery Co., Peoria, Ill.

Model	Cap.	Chas. Price	Comp.	Page
B	4,000	$2,700	.....	84
B	6,000	3,200	.....	90
B	10,000	4,500	.....	94

C. L. Barker Factory, Norwalk, Conn.

Model	Cap.	Chas. Price	Comp.	Page
U	2,000	$2,000	.....	79
U	3,000	1,600	.....	82
V	5,000	1,800	.....	88

Bauer Mch Wks. Co., Kansas City, Mo.

Model	Cap.	Chas. Price	Comp.	Page
A	1,000	$720	.....	76
B	1,500	840	.....	77

Beech Creek T'k. & Auto. Co., B'h. C'k., Pa.

Model	Cap.	Chas. Price	Comp.	Page
2 A	6,000	$3,850	.....	90

Bell Motor Car Co., York, Pa.

Model	Cap.	Chas. Price	Comp.	Page
17	1,000	.....	.....	76

Bessemer Motor T. Co., Grove City, Pa.

Model	Cap.	Chas. Price	Comp.	Page
J	2,000	$1,985	.....	79
G	2,000	1,075	.....	79
D	4,000	2,200	.....	84
E	7,000	3,100	.....	91

Bethlehem Motors Corp., Allentown, Pa.

Model	Cap.	Chas. Price	Comp.	Page
A 1	2,500	$1,125	$1,165	81
B 1	4,500	1,665	.....	88

Blair Motor Truck Co., Newark, O.

Model	Cap.	Chas. Price	Comp.	Page
2 C	4,000	$2,850	.....	84
2 D	6,000	3,250	.....	90
2 E	8,000	3,750	.....	93
2 F	10,000	4,250	.....	94

Bollstrom Prod. S. Co., Battle Creek, Mich.

Model	Cap.	Chas. Price	Comp.	Page
A	1,500	$1,200	.....	77

Bourne Magnetic Truck Co., Phila., Pa.

Model	Cap.	Chas. Price	Comp.	Page
V M	4,000	$3,150	.....	84
X M	7,000	3,850	.....	91

Bowling Green M. C. Co., Bowling Green, O.

Model	Cap.	Chas. Price	Comp.	Page
T	2,000	.....	.....	80
N	2,000	.....	.....	83
R	4,000	.....	.....	86
B	7,000	.....	.....	92

Brinton Motor Truck Co., Phila., Pa.

Model	Cap.	Chas. Price	Comp.	Page
11	2,000	$995	.....	79
F	5,000	2,250	.....	88

Briscoe Motor Corp., Jackson, Mich.

Model	Cap.	Chas. Price	Comp.	Page
L Del.	1,000	.....	$585	76

Brockway M. Truck Co., Cortland, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
O	2,000	$1,500	.....	79
J 2	3,000	1,875	.....	82
K 2	4,000	2,250	.....	85
R	7,000	3,200	.....	91

Buckeye Mfg. Co., Anderson, Ind.

Model	Cap.	Chas. Price	Comp.	Page
V 1	1,000	$900	.....	76
V 3	3,000	1,500	.....	82
V 5	4,000	2,000	.....	86

Buick Motor Co., Flint, Mich.

Model	Cap.	Chas. Price	Comp.	Page
D 4	2,000	$1,150	$1,225	79

H. G. Burford Co., Fremont, O.

Model	Cap.	Chas. Price	Comp.	Page
O 3	4,000	$2,250	.....	85
D 3	8,000	3,600	.....	93

Cadillac Auto Truck Co., Cadillac, Mich.

Model	Cap.	Chas. Price	Comp.	Page
B	2,000	$1,575	.....	79
A	4,000	2,200	.....	84
C	7,000	3,000	.....	91

Chadwick Eng. Works, Pottstown, Pa.

Model	Cap.	Chas. Price	Comp.	Page
21	1,200	$650	.....	77

Champion Wagon Co., Inc., Owego, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
25	1,500	$875	.....	77

Chase Motor Truck Co., Syracuse, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
T	1,500	$1,500	.....	77
A	2,000	1,725	.....	79
C	3,000	2,125	.....	82
B	5,000	2,475	.....	88
X	6,000	2,800	.....	90
O	7,000	3,300	.....	91

Chicago Pneumatic Tool Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
H	2,000	$1,400	.....	80
15	2,000	1,500	.....	80
H	3,000	1,500	.....	83
16	4,000	2,250	.....	86

Coleman Carriage & Har. Co., Illion, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
J	4,000	$2,400	.....	85
H	6,000	3,000	.....	90

Collier Motor Truck Co., Painesville, O.

Model	Cap.	Chas. Price	Comp.	Page
M	1,500	$800	.....	77

Columbia M. T. & T'r. Co., Pontiac, Mich.

Model	Cap.	Chas. Price	Comp.	Page
E	4,000	$1,850	.....	85

Commerce Motor Car Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
N	1,500	$875	.....	77
E	2,000	1,175	.....	79

Continental Motor Truck Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
C A 1	2,000	$1,550	.....	79
C B 1½	2,000	1,750	.....	82
C C 2	4,000	2,100	.....	85
C D 3½	7,000	3,000	.....	91
C P 4	8,000	3,350	.....	93
C S 5	10,000	4,000	.....	94

Continental Truck Mfg. Co., Superior, Wis.

Model	Cap.	Chas. Price	Comp.	Page
W 20	5,000	$2,000	$2,200	88
W 30	8,000	2,750	3,000	93

Corbitt Motor Truck Co., Henderson, N. C.

Model	Cap.	Chas. Price	Comp.	Page
E	2,000	$1,300	.....	79
D	3,000	2,150	.....	82
C	4,000	2,400	.....	85
B	5,000	2,650	.....	88
A	7,000	3,200	.....	91

Corliss Motor Truck Co., Corliss, Wis.

Model	Cap.	Chas. Price	Comp.	Page
A	1,000	$800	.....	76

Couple G. F. W. Co., Grand Rapids, Mich.

Model	Cap.	Chas. Price	Comp.	Page
H C	7,000	$5,100	.....	91
A C	10,000	5,500	.....	94

Croce Automobile Co., Asbury Park, N. J.

Model	Cap.	Chas. Price	Comp.	Page
18	1,000	$800	.....	76
18	3,000	1,900	.....	82
18	5,000	2,600	.....	88

Crowther Motors Corp., Rochester, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
L D	1,000	.....	$600	76

Day-Elder Motors Corp., Newark, N. J.

Model	Cap.	Chas. Price	Comp.	Page
..	1,500	$975	.....	77
..	2,000	1,250	.....	79
..	3,000	1,500	.....	82
..	5,000	2,000	.....	88

Dart Motor Truck Co., Waterloo, Ia.

Model	Cap.	Chas. Price	Comp.	Page
B B	1,000	$1,200	.....	76
E	2,000	1,850	.....	79
C C	4,000	2,470	.....	85

Dayton Motor Truck Co., Dayton, O.

Model	Cap.	Chas. Price	Comp.	Page
U	4,000	$2,650	.....	85
A	7,000	3,400	.....	91
B	10,000	4,500	.....	94
E	15,000	4,950	.....	97

DeKalb Wagon Co., DeKalb, Ill.

Model	Cap.	Chas. Price	Comp.	Page
E 2	4,000	$2,100	.....	85
E 2½	5,000	2,450	.....	88

Denby Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
12	2,000	$1,275	.....	79
13	3,000	1,775	.....	82
15	5,000	2,150	.....	88

Dennecn Motor Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
10	2,500	$1,385	.....	81

Detroit Commer. Car Co., Pontiac, Mich.

Model	Cap.	Chas. Price	Comp.	Page
B	1,000	.....	.....	76

Detroit Wyan. M. T. Co., Wyandotte, Mich.

Model	Cap.	Chas. Price	Comp.	Page
..	2,000	$2,350	.....	82
F G	4,000	.....	.....	86
F G	6,000	.....	.....	90
F	10,000	4,350	.....	94

Diamond T Motor Car Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
J 5	2,000	$1,550	.....	79
J 4	3,000	2,000	.....	82
J 3	4,000	2,325	.....	85
L	7,000	3,475	.....	91
R	10,000	4,300	.....	94

Dispatch M. Car Co., Minneapolis, Minn.

Model	Cap.	Chas. Price	Comp.	Page
L	1,500	$1,100	.....	78

Doane Motor T. Co., San Francisco, Cal.

Model	Cap.	Chas. Price	Comp.	Page
1916	5,000	.....	$3,000	88
1916	12,000	.....	4,500	96

Dominion Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
Tractor	12,000	$3,200	.....	97

Dorris Motor Car Co., St. Louis, Mo.

Model	Cap.	Chas. Price	Comp.	Page
1 B W	4,000	$2,185	.....	85

Duplex Power Car Co., Charlotte, Mich.

Model	Cap.	Chas. Price	Comp.	Page
C	4,000	$2,800	.....	85
E	4,000	.....	.....	85
D	6,000	3,300	.....	90
E	7,000	.....	.....	91

Duryea Motors, Inc., Philadelphia, Pa.

Model	Cap.	Chas. Price	Comp.	Page
A B or C	1,000	$600	.....	76

Economy Motor Co., Tiffin, O.

Model	Cap.	Chas. Price	Comp.	Page
..	1,000	.....	$795	76

F.

Fargo Motor Car Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
O	4,000	$1,390	.....	85

Federal Motor Truck Co., Detriot, Mich.

Model	Cap.	Chas. Price	Comp.	Page
S	2,000	.....	.....	79
M	3,000	$1,800	.....	82
O & P	4,000	2,100	.....	85
L	7,000	2,800	.....	91
W	10,000	.....	.....	94

Forschler M. T. Mfg. Co., N. Orleans, La.

Model	Cap.	Chas. Price	Comp.	Page
A O	2,000	$1,650	.....	79
B O	4,000	2,250	.....	85

Four Wheel Drive A. Co., Clintonville, Wis.

Model	Cap.	Chas. Price	Comp.	Page
B	6,000	$4,000	.....	90

Fulton M. T. Co., Farmingdale, L. I., N. Y.

Model	Cap.	Chas. Price	Comp.	Page
F 1	3,000	$1,090	.....	82

Gabriel Auto Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
B	1,500	$800	.....	78

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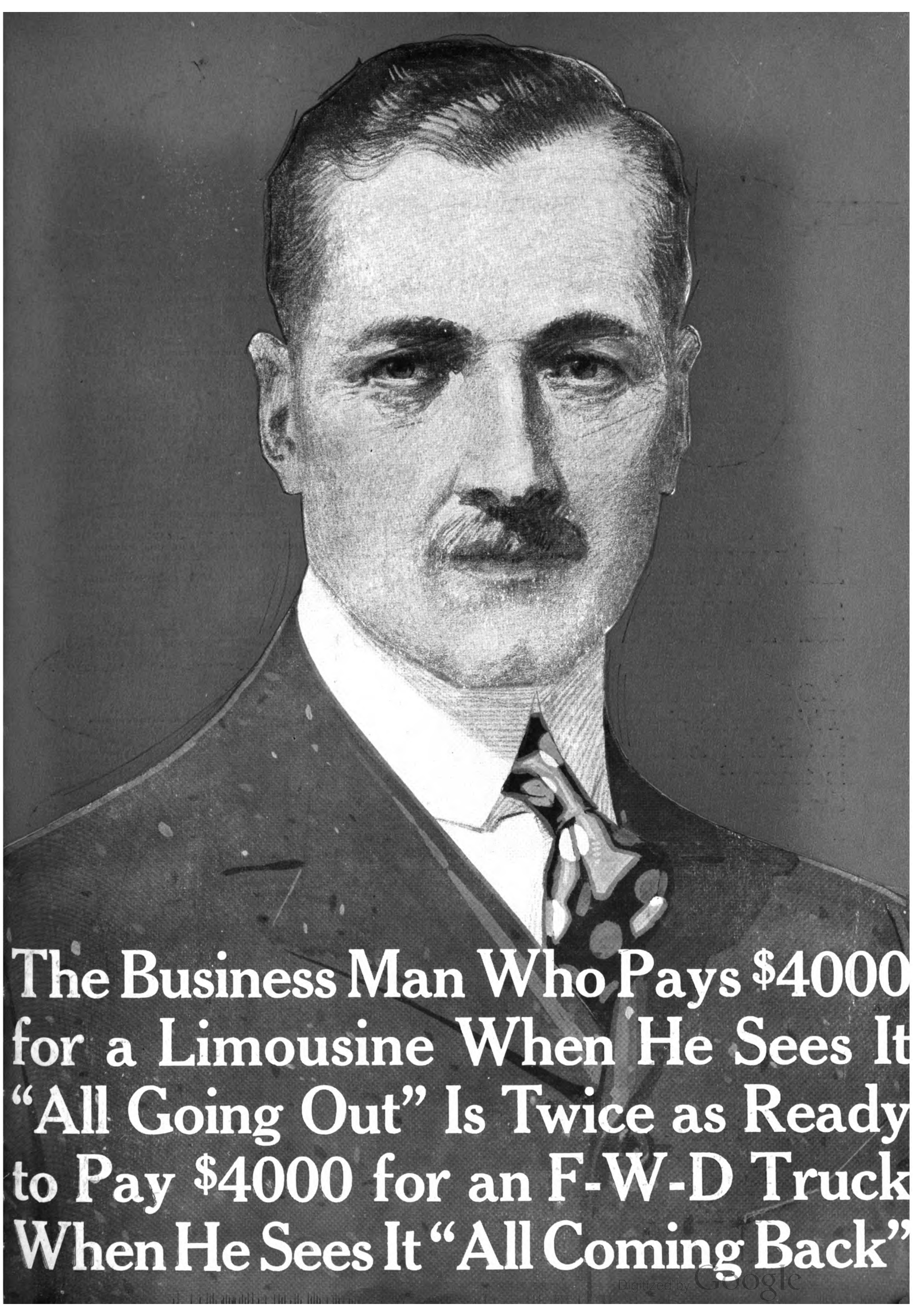

The Business Man Who Pays $4000 for a Limousine When He Sees It "All Going Out" Is Twice as Ready to Pay $4000 for an F-W-D Truck When He Sees It "All Coming Back"

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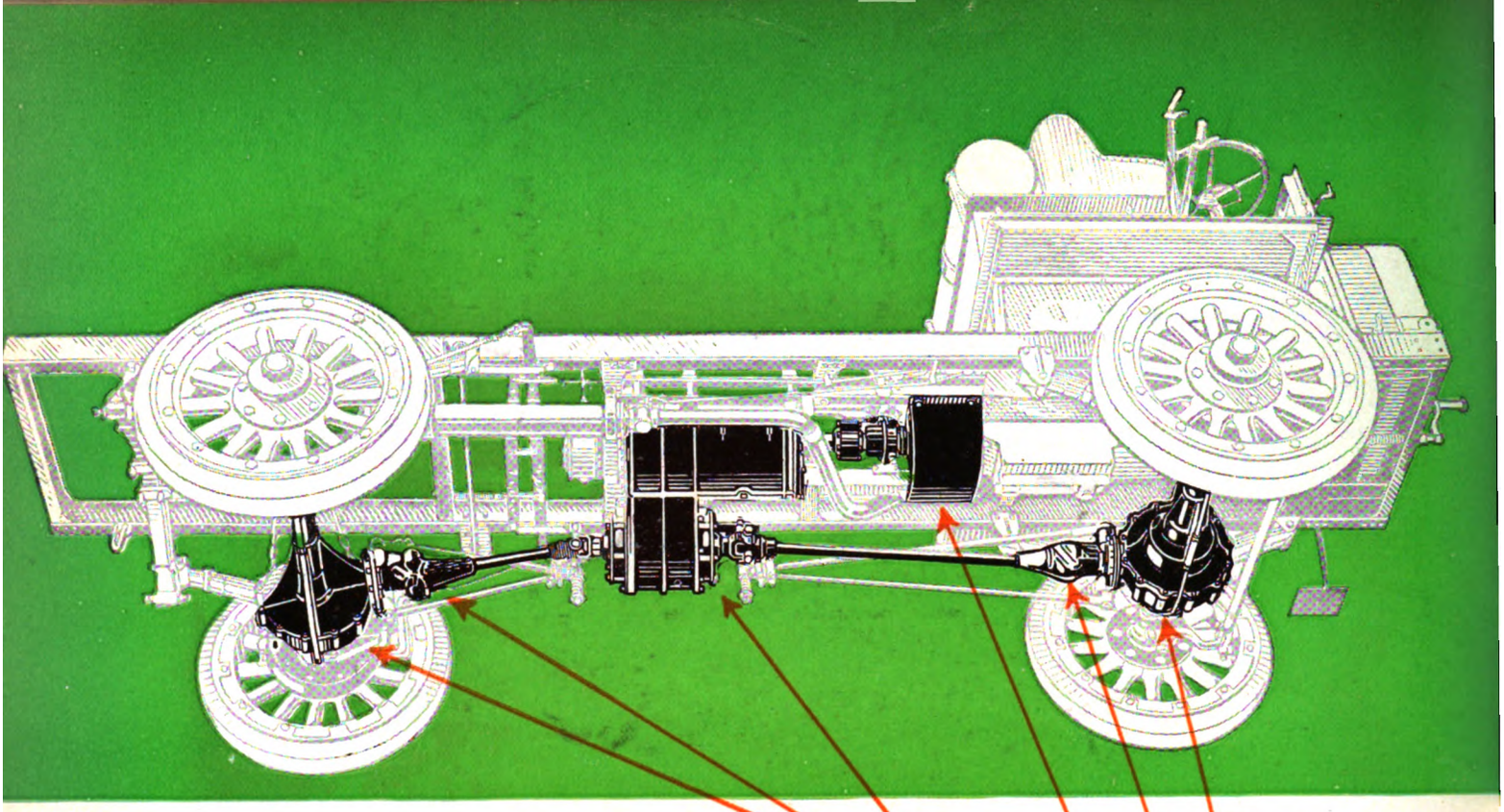

Driving Power in All Four Wheels

Look at this construction. This is the simple and direct manner in which the four wheel drive principle is transmitted from the power plant to the road wheels in F. W. D. trucks.

Instead of *all* the power being shot clear back to the rear axle, leaving the front end a dead and idle load, the power is *divided*, sending half to the front and half to the rear axle, making every wheel a power wheel.

This is why F. W. D. trucks will out-demonstrate anything on four wheels, not only in daily average service but in super-service, in sand, mud, broken stone, on hills and over otherwise impassable going where other trucks will not perform.

Multiple Disc Clutch through which power is conveyed from the engine to the transmission.

Forward Differential and propeller shaft. Power is conveyed to the front live axle precisely in the same manner as to the rear axle.

Rear Differential and propeller shaft through which half the engine power is transmitted to the rear road wheels.

The exclusive F.W.D. *Center Differential* through which the power is divided and sent to front and rear axles. Its equalizing action between the two axles is precisely the same as that of the front and rear differential between two wheels.

FWD

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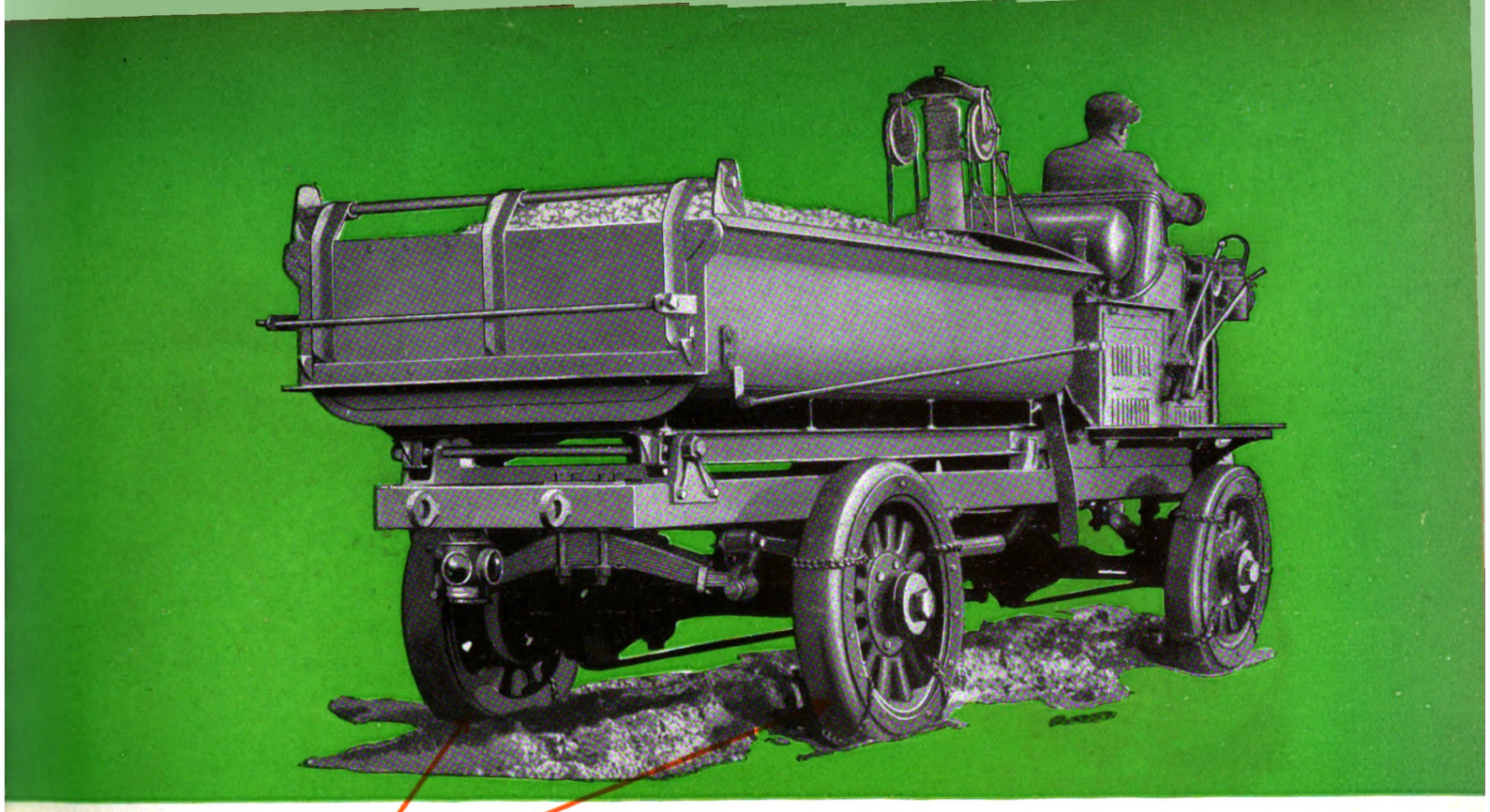
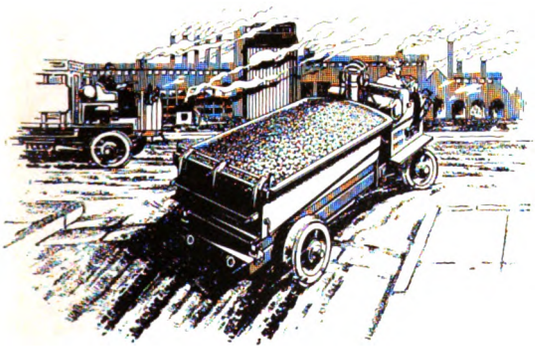


Tire manufacturers give to users of F. W. D. trucks with four six-inch tires, the same guarantee which they give on rear-drive trucks with six six-inch or dual rear tires.

Economy

Every truck user knows, and every dealer knows that the big, definite expense that constantly looms up in truck operation, is tire cost.



F. W. D. trucks cut tire cost from the start, not only by putting equal strain and wear on each tire, and cutting out the backlash resulting from resistance of idle wheels, but also from the fact that only four six-inch tires are used instead of six. Read the statement of the tire manufacturers' guarantee on this page.

But tire economy is not all. With every wheel a driving wheel, more power is delivered to the road wheels and utilized—a higher percentage of power per gallon of gasoline actually transmitted into service rendered.

And in addition, the equal distribution of pull, the distribution of load—45% front, 55% rear—means equalized strain, equalized wear—no abnormal strain or wear on any one part of the mechanism. As a consequence F. W. D. trucks stay on the road in active daily service, with practically no outlay for repairs.

FWD

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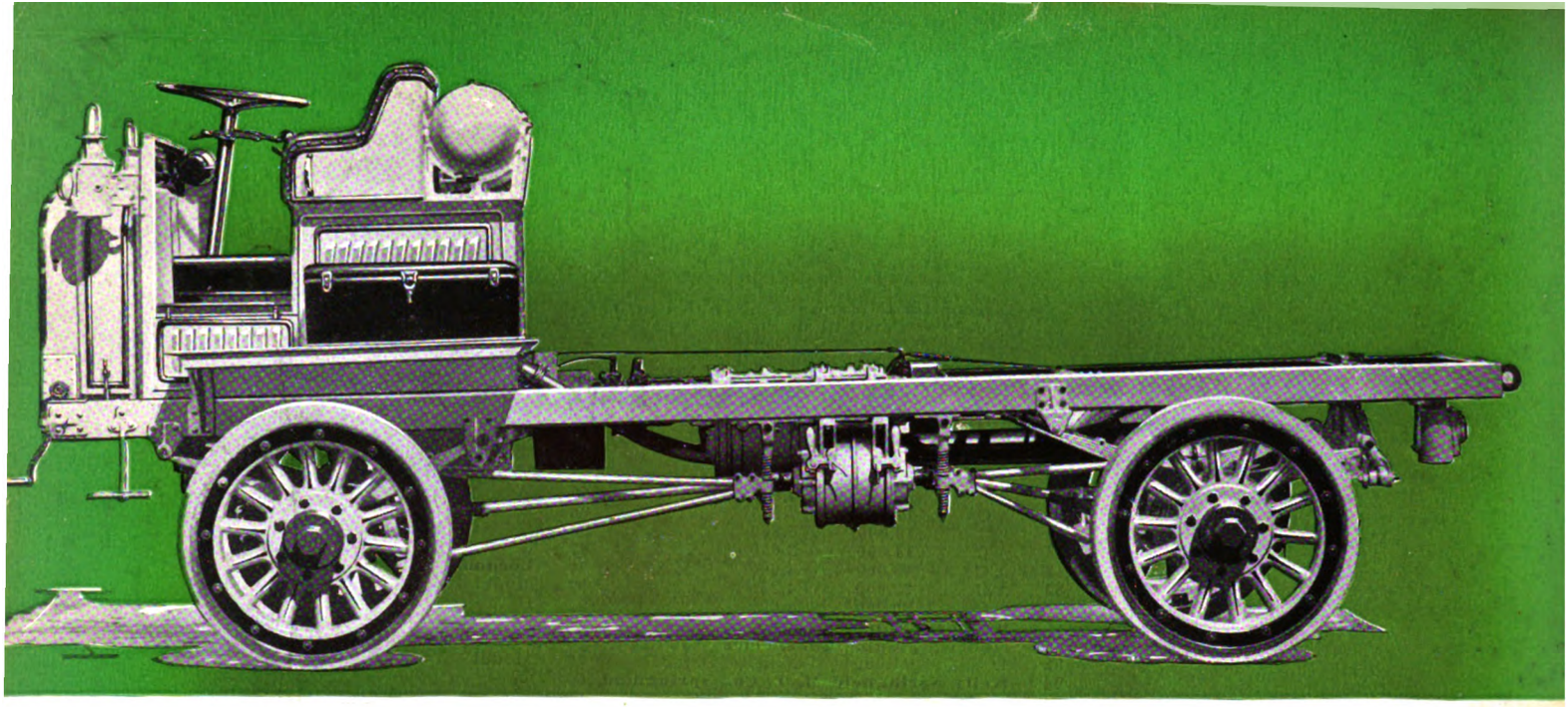

Specifications

Model B—Three Ton Chassis

Load Capacity—3 Ton.
Chassis Weight in Pounds—6,200 pounds.
Wheel Base—124 inches.
Tread—56 inches.
Turning Radius—24 feet, 6 inches.
Speed—14 miles per hour.
Tires—Make, optional. Front and rear, 36x6.
Wheels—Front and rear interchangeable, 36x6 S. A. E. Standard. Artillery type.
Number of Cylinders—Four. Bore, 4¼. Stroke, 5½. Offset of Cylinders, ¾-inch.
Diameter of Crank Shaft on all Bearings—2 inches.
Front and Center Crank Shaft Bearings—3½ inches long.
Connecting Rod Bearing—3½ inches.
Diameter of Wrist Pins—$1\frac{3}{16}$ inches.
Diameter of Cam Shafts—$\frac{15}{16}$-inch.
Length of Connecting Rod—12 inches.
Drop of Motor from Supporting Arms to Center of Crank Shaft—3 inches.
Length of Pistons—6 inches.
Engine Governor—On manifold, regulated and set at 1,100 revolutions.
Number of Piston Rings—3.
Control—Hand throttle and lever.
Diameter of all Valves, Intake and Exhaust—2½ inches.
Weight of Motor—580 pounds. Horse Power—A. L. A. M. rating 36.1.
Cooling System—Centrifugal pump and radiator fan driven from pump shaft.
Radiator—Perfex Type. Three point suspension.
Radiator Capacity—8 Gallons.
Ignition—High tension magneto.
Carburetor—Stromberg.
Motor Lubrication—Force feed to all bearings and combined splash system.
Gear Set—Shifting quadrant—own make. Location—on seat frame.
Number of Speeds—Three speeds forward and one reverse.
Transmission—Jaw clutch type—selective, gears always in mesh.
Gear Ratio of the Transmission—1:1 on high, 2:1 on second, 4:1 on low and 4.13:1 on reverse.
Gears—1¼ inch wide, 5 to 7 pitch.
Total Gear Reduction—8.9:1 on high, 17.80:1 second, 35.60:1 low, 36.07:1 reverse.
Sub-Transmission—Driven by silent chain on differential, which has a locking device.
Springs—Alloy Steel. Front springs 2½ inches wide, 45½ inches long, semi-elliptic, platform spring in the rear. Side springs, 2½ inches wide and 44 inches long. Cross springs, 2½ inches wide, 40½ inches long, semi-elliptic.
Shifting Levers—Steering wheel irreversible. Gear shift location—on seat frame. Emergency brake location—on seat frame.
Clutch and Foot Brake Pedal—Hele-Shaw Multiple Disc Clutch, consisting of steel and copper plates running in oil.
Gasoline Capacity—20 Gallons.
Universal Joints—Full double universal joint between clutch and transmission and one universal joint on each end of driving shafts.
Axles—Both axles full floating—front axle having patented ball and socket containing universal running constantly in oil.
Brakes—External service foot brake on transmission shaft 10 inches diameter by 3½ inches wide. Eternal emergency brake 15¼ inches diameter by 2¼ inches wide.
Bearings—All hub bearings interchangeable for all four wheels. Two bearings used to each wheel.
Equipment—Complete set of tools. Toolbox, oil cans, horn, Hub-cap, motor and magneto wrenches. Two kerosene side lamps, one kerosene tail lamp.
Painting—Chassis painted in lead color.

Dealers There is at present some extremely profitable open territory, offering a remarkable opportunity to build up a big, sound and permanent business on F. W. D. trucks. Write us for full information on discounts, terms and the details of our contract. Or, better still, come to Clintonville and talk it over.

F W D

Four Wheel Drive Auto Company
Clintonville, Wisconsin

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C	2,000	1,600	.....	79
D	3,000	2,000	.....	82
E	4,000	2,400	.....	85
F	7,000	3,200	.....	91

Garford Motor Truck Co., Lima, O.

Model	Cap.	Chas. Price	Comp.	Page
75	2,000	$1,750	.....	79
66	3,000	2,100	.....	82
70 B	4,000	2,600	.....	85
77 B	7,000	3,700	.....	91
68	10,000	4,500	.....	94
69	12,000	4,700	.....	96

Gary Motor Truck Co., Gary, Ind.

Model	Cap.	Chas. Price	Comp.	Page
F	2,000	.....	.....	80
G	3,000	.....	.....	82
H	4,000	.....	.....	85

General Motors Truck Co., Pontiac, Mich.

Model	Cap.	Chas. Price	Comp.	Page
15	1,500	$1,150	.....	73
30	3,000	1,900	.....	82
31	3,000	2,100	.....	82
40	4,000	2,375	.....	85
41	4,000	2,550	.....	85
70	7,000	3,300	.....	92
71	7,000	3,500	.....	92
100	10,000	3,850	.....	94
101	10,000	4,100	.....	94

General Veh. Co., Long Island City, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
F V	12,000	$4,500	.....	96

Geneva Wagon Co., Geneva, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
1	1,500	$750	.....	78

Gerlinger Motor Co., Tacoma, Wash.

Model	Cap.	Chas. Price	Comp.	Page
G	5,000	$2,650	.....	88

Gramm-Bernstein Motor T. Co., Lima, O.

Model	Cap.	Chas. Price	Comp.	Page
..	2,000	$1,750	.....	80
..	3,000	2,150	.....	82
..	4,000	2,450	.....	85
..	5,000	2,900	.....	88
..	7,000	3,600	.....	92
..	12,000	4,500	.....	96

Hahn Motor Truck Co., Hamburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
C	2,000	$1,750	.....	80
E	4,000	2,200	.....	85

C. F. Hanger Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
B	1,000	$875	.....	76

Hannibal Motor Car Co., Hannibal, Mo.

Model	Cap.	Chas. Price	Comp.	Page
A	1,000	$550	.....	76

Harrison Co., Robert, So. Boston, Mass.

Model	Cap.	Chas. Price	Comp.	Page
C	7,000	.....	.....	92
F	7,000	.....	.....	92

Harvey Motor Truck Co., Harvey, Ill.

Model	Cap.	Chas. Price	Comp.	Page
W F A	5,000	$2,500	.....	88
W H A	7,000	3,250	.....	92
W K A	10,000	4,000	.....	94

Hawkeye Mfg. & Rep. Co., Sioux City, Ia.

Model	Cap.	Chas. Price	Comp.	Page
H	2,500	$1,300	.....	81

Henderson Bros., No. Cambridge, Mass.

Model	Cap.	Chas. Price	Comp.	Page
C	1,200	$1,125	.....	77
D	2,000	1,500	.....	80

Hewitt-Lud. Auto Co., San Francisco, Cal.

Model	Cap.	Chas. Price	Comp.	Page
..	1,500	$1,650	.....	78
..	2,000	1,800	.....	80
..	3,000	2,250	.....	82
..	3,000	2,150	.....	82
..	5,000	2,250	.....	89
..	5,000	2,350	.....	89

Hoadley Bros., Gosport, Ind.

Model	Cap.	Chas. Price	Comp.	Page
	4,000	$3,000	.....	86

Hoover Wagon Co., York, Pa.

Model	Cap.	Chas. Price	Comp.	Page
15 A	1,500	$1,190	.....	78

Hurlburt Motor Truck Works, Harvey, Ill.

Model	Cap.	Chas. Price	Comp.	Page
	3,000	$2,250	.....	82
	4,000	3,000	.....	86
	7,000	3,500	.....	92
	10,000	4,250	.....	94
	14,000	5,000	.....	97

Independent Mot. Co., Port Huron, Mich.

Model	Cap.	Chas. Price	Comp.	Page
F	2,000	$1,385	.....	80
G	4,000	1,850	.....	86

International Harvester Corp., Akron, O.

Model	Cap.	Chas. Price	Comp.	Page
M A	1,000	$600	.....	76
M W	1,000	710	.....	76
H	1,500	950	.....	78
F	2,000	1,500	.....	80

Indiana Truck Co., Marion, Ind.

Model	Cap.	Chas. Price	Comp.	Page
S	2,000	.....	.....	80
D	4,000	.....	.....	86
R	7,000	.....	.....	92
L	10,000	.....	.....	94

International Motor Co., New York, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
A B	2,000	$2,150	.....	80
A B	2,000	2,150	.....	80
A B	3,000	2,500	.....	83
A B	3,000	2,500	.....	83
A B	4,000	2,800	.....	86
A B	4,000	2,800	.....	86
A B	5,000	2,800	.....	89
A C	7,000	3,650	.....	92
..	10,000	4,800	.....	95
A C	11,000	4,250	.....	96
..	13,000	5,800	.....	96
A C	14,000	3,650	.....	97
A C	15,000	4,600	.....	97
A C	22,000	4,250	.....	97
A C	30,000	4,600	.....	97

Kearns Motor Truck Co., Beavertown, Pa.

Model	Cap.	Chas. Price	Comp.	Page
D	1,000	.....	.....	76

Kelly Springfield M. T. Co., Springfield, O.

Model	Cap.	Chas. Price	Comp.	Page
K 32	3,000	$2,250	.....	83
K 31	3,000	2,250	.....	83
K 35	5,000	3,000	.....	89
K 36	5,000	3,000	.....	89
K 40	7,000	3,650	.....	92
K 45	8,000	3,800	.....	93
K 50	10,000	4,400	.....	95
K 60	12,000	4,600	.....	96

Kentucky Wagon Mfg. Co., Louisville, Ky.

Model	Cap.	Chas. Price	Comp.	Page
M	1,250	$825	.....	77

A. R. King Mfg. Co., Kingston, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
..	7,000	$2,600	.....	92

Kissel Motor Car Co., Hartford, Wis.

Model	Cap.	Chas. Price	Comp.	Page
..	1,500	$950	.....	78
..	2,000	1,250	.....	80
..	4,000	1,875	.....	86
..	5,000	2,250	.....	89
..	7,000	2,850	.....	92

Kleiber & Co., Inc., San Francisco, Cal.

Model	Cap.	Chas. Price	Comp.	Page
A A	1,500	$1,600	.....	78
A	3,000	2,250	.....	83
B B	4,000	2,400	.....	86
B	5,000	2,750	.....	89
C	7,000	3,500	.....	92
D	10,000	4,500	.....	95

Knickerbocker M. Tk. Co., New York City.

Model	Cap.	Chas. Price	Comp.	Page
16	4,000	$2,200	.....	86
16	7,000	2,850	.....	92
16	10,000	4,000	.....	95

Knox Motors Associates, Springfield, Mass.

Model	Cap.	Chas. Price	Comp.	Page
36	6,000	$5,000	.....	90
35	.....	4,500	.....	97

H. J. Koehler Mot. Corp., Newark, N. J.

Model	Cap.	Chas. Price	Comp.	Page
K	2,000	$895	.....	80

Krebs Commercial Car Co., Clyde, O.

Model	Cap.	Chas. Price	Comp.	Page
40	3,000	$2,050	.....	83
60	4,000	2,375	.....	86
90	7,000	3,250	.....	92
98	10,000	4,000	.....	95

Lamson Truck & Tractor Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
1 S B	2,000	$1,550	.....	81
..	3,000	1,950	.....	84
..	5,000	2,450	.....	89
..	7,000	3,250	.....	93
..	10,000	4,150	.....	96

Wm. Landshaft & Son, Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
G 1	2,000	$1,250	.....	80
J 1	4,000	1,550	.....	86

Lane Motor Truck Co., Kalamazoo, Mich.

Model	Cap.	Chas. Price	Comp.	Page
A	1,500	$1,075	.....	78

Lange Motor Truck Co., Pittsburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
C	2,000	$1,950	.....	80
B	4,000	2,550	.....	86

Larrabee Deyo M. T. Co., Binghamton, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
M	2,000	$1,600	.....	80
N	3,000	2,000	.....	83
O	5,000	2,400	.....	89
P	5,000	2,475	.....	89
R	7,000	3,200	.....	92
S	7,000	3,300	.....	92

Lawson Mfg. Co., Pittsburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
35	1,000	.....	.....	77
..	1,500	.....	.....	78

Leocina Automobile Co., Newark, N. J.

Model	Cap.	Chas. Price	Comp.	Page
W	1,000	.....	.....	77

Lewis-Hall Iron Works, Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$2,000	.....	85
..	7,000	2,800	.....	92
..	7,000	2,800	.....	92
..	10,000	3,400	.....	94

Lincoln Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
D	1,500	$900	.....	78

Lippard Stewart M. C. Co., Buffalo, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
M	1,000	$1,000	.....	77
W	1,500	1,600	.....	78
H	2,000	2,000	.....	80
F	3,000	2,300	.....	83
G	4,000	2,600	.....	86

Locomobile Co. of Am., Bridgeport, Conn.

Model	Cap.	Chas. Price	Comp.	Page
B	6,000	$3,600	.....	90
B B	8,000	3,750	.....	94

Lombard Auto Trac. Tk. Co., New York.

Model	Cap.	Chas. Price	Comp.	Page
..	2,000	.....	.....	80
..	10,000	.....	$6,000	95

Maccar Truck Company, Scranton, Pa.

Model	Cap.	Chas. Price	Comp.	Page
L	3,000	$2,100	.....	83
H	5,000	2,600	.....	89
M	7,000	3,250	.....	92
U	11,000	4,150	.....	96

Manly Motor Corp., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
30	3,000	$1,800	.....	83
50	5,000	$2,250	.....	89

Mansur Motors Co., Haverhill, Mass.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$2,500	.....	86

Martin Truck & Body Corp., York, Pa.

Model	Cap.	Chas. Price	Comp.	Page
17	7,500	$750	.....	77

Maxwell Motor Co., Inc., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
25	500	$535	.....	76

Menominee M. T. Co., Menominee, Mich.

Model	Cap.	Chas. Price	Comp.	Page
E W	1,500	$1,295	.....	78
F W	2,000	1,575	.....	80
H	3,000	1,775	.....	83
D	4,000	2,240	.....	86
G	7,000	2,775	.....	92

Mills-Ellsworth Co., Keokuk, Ia.

Model	Cap.	Chas. Price	Comp.	Page
25 A	1,000	.....	$695	76

Mogul Motor Truck Co., St. Louis Mo.

Model	Cap.	Chas. Price	Comp.	Page
L M	3,000	$1,600	.....	83
L W	4,000	2,000	.....	86
L	5,000	2,250	.....	89
T	7,000	2,550	.....	92

Moon Buggy Co., Jos. W., St. Louis, Mo.

Model	Cap.	Chas. Price	Comp.	Page
B	3,000	$1,650	.....	83

Moreland Motor Tk. Co., Los Angeles, Cal.

Model	Cap.	Chas. Price	Comp.	Page
..	2,000	$1,500	.....	80
..	3,000	2,100	.....	83
..	5,000	2,750	.....	89
..	8,000	3,600	.....	93
16 J	10,000	4,250	.....	95

Morton Truck & Tr. Co., Harrisburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
..	6,000	.....	.....	90

Mercury Mfg. Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
P	1,000	$650	.....	77
..	.....	3,400	.....	96
A	.....	3,400	.....	97

Myers Machine Co., Sheboygan, Wis.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,650	.....	81
B	6,000	2,275	.....	91

Nash Motors Co., Kenosha, Wis.

Model	Cap.	Chas. Price	Comp.	Page
1016	1,500	$965	.....	78
2016	3,000	1,465	.....	83
4016 Qd..	4,000	2,850	.....	86

Nelson & Le Moon, Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
E 1	2,000	$1,700	.....	80
E 2	4,000	2,250	.....	86
E 3	6,000	2,950	.....	90
E 5	10,000	4,200	.....	95

New England Tk. Co., Fitchburg, Mass.

Model	Cap.	Chas. Price	Comp.	Page
C	3,000	$ 2,250	.....	83
D	4,000	2,350	.....	86

New London T. Co., The, N. London, Conn.

Model	Cap.	Chas. Price	Comp.	Page
25	1,000	$575	.....	77

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Niles Car & Mfg. Co., Niles, O.

Model	Cap.	Chas. Price	Comp.	Page
B	2,000	.....	.....	80
E	4,000	.....	.....	86

Old Reliable Motor Tk Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
..	3,000	$1,950	.....	83
..	4,000	2,750	.....	87
..	5,000	2,750	.....	89
..	6,000	3,250	.....	90
..	3,000	3,750	.....	93
..	8,000	3,750	.....	93
..	10,000	4,250	.....	95
..	12,000	4,500	.....	96
..	14,000	$5,000	.....	97

Pacific Metal Products Co., Torrence, Cal.

Model	Cap.	Chas. Price	Comp.	Page
..	5,000	$2,500	.....	89
..	10,000	4,500	.....	95

Packard Motor Truck Co, Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
1 E	2,500	$2,200	.....	81
1½ E	3,000	2,500	.....	83
2 E	4,000	2,800	.....	87
3 E	7,000	3,400	.....	92
4 E	9,000	3,800	.....	94
5 E	11,000	4,300	.....	96
6 E	13,000	4,550	.....	96

Packet M. C. Mfg. Co., Minneapolis, Minn.

Model	Cap.	Chas. Price	Comp.	Page
Packet	600	$325	.....	76

Palmer Meyer M. C. Co., St. Louis, Mo.

Model	Cap.	Chas. Price	Comp.	Page
..	2,000	$1,485	.....	81
..	3,000	1,800	.....	83
..	4,000	1,975	.....	87

Palmer Moore, Syracuse, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
K	1,500	$1,150	.....	78
M	2,000	1,350	.....	81

Peerless Motor Car Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
T C 2	4,000	$3,000	.....	87
T C 3	6,000	3,700	.....	90
T C 4	8,000	4,000	.....	94
T C 5	10,000	4,500	.....	95
T C 6	12,000	5,000	.....	96

Pennsy M. Co. of Pittsburg, Pittsburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
15	1,000	$650	.....	77

Phoenix Mfg. Co., Eau Claire, Wis.

Model	Cap.	Chas. Price	Comp.	Page
Centiped	..	.....	.....	97

Pierce-Arrow Motor Car Co., Buffalo, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$3,000	.....	87
..	10,000	4,500	.....	95

Piggins Bros. Motor Tk. Co., Racine, Wis.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$2,750	.....	87

Pullman Motor Car Co., York, Pa.

Model	Cap.	Chas. Price	Comp.	Page
4-24	1,000	$725	.....	77

Rainier Motor Corp., New York City.

Model	Cap.	Chas. Price	Comp.	Page
..	1,000	$875	.....	77

Reading Standard Co., Reading, Pa.

Model	Cap.	Chas. Price	Comp.	Page
..	350	$305	.....	76

Reo Motor Car Co., Lansing, Mich.

Model	Cap.	Chas. Price	Comp.	Page
F	1,500	$925	.....	78
J	4,000	1,650	.....	87

Republic Motor Truck Co., Alma, Mich.

Model	Cap.	Chas. Price	Comp.	Page
Disp'ch 9	1,500	$750	.....	78
10	2,000	1,095	.....	81
11	3,000	1,275	.....	83
A	4,000	1,785	.....	87
T	6,000	2,675	.....	90

Rocco Motor Car Corp., Hannibal, Mo.

Model	Cap.	Chas. Price	Comp.	Page
A	1,000	.....	$750	77

Rowe Motor Co., Dowlingtown, Pa.

Model	Cap.	Chas. Price	Comp.	Page
C W	2,000	$2,450	.....	81
C D W	4,000	2,800	.....	87
D F W	6,000	3,400	.....	90
T W	10,000	4,500	.....	95

Royal Motor Truck Co, New York, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
B 1	2,000	.....	.....	81
B 2½	5,000	.....	.....	89
A 3½	7,000	.....	.....	93
A 5	10,000	.....	.....	95
A 6	12,000	.....	.....	96
A 7	14,000	.....	.....	97

Rush Delivery Car Co., Philadelphia, Pa.

Model	Cap.	Chas. Price	Comp.	Page
D	1,000	$735	.....	77

Sandow Truck Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
..	3,000	$1,800	.....	84
..	4,000	2,000	.....	87
..	4,000	2,350	.....	87
..	6,000	2,500	.....	90
..	6,000	3,000	.....	90

Sanford Motor Truck Co., Syracuse, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
O	1,500	$1,290	.....	78
R	2,500	1,350	.....	81
S	4,000	2,100	.....	87

Saxon Motor Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
..	400	$395	.....	76

Schacht M. T. Co., G. A., Cincinnati, O.

Model	Cap.	Chas. Price	Comp.	Page
..	3,000	$2,650	.....	84
..	4,000	2,800	.....	87
..	6,000	3,200	.....	90

Schleicher Motor V. Co., New York City.

Model	Cap.	Chas. Price	Comp.	Page
..	6,000	$3,500	.....	90
..	10,000	4,500	.....	95

Selden Truck Sales Co., Rochester, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
G	1,500	$985	.....	78
T X	2,000	1,385	.....	81
T	2,500	1,700	.....	82
J C	4,000	2,100	.....	87
J W L	4,000	2,350	.....	87
N L	7,000	3,150	.....	93

Service Motor Truck Co., Wabash, Ind.

Model	Cap.	Chas. Price	Comp.	Page
120	2,000	$1,375	.....	81
130	3,000	1,950	.....	84
140	4,000	2,250	.....	87
170	7,000	3,000	.....	93
175	7,000	3,250	.....	93
200	10,000	4,000	.....	95

Signal Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
F	2,000	$1,700	.....	81
H	3,000	2,000	.....	84
J	4,000	2,300	.....	87
M	7,000	3,000	.....	93
R	10,000	4,000	.....	95

Standard Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
70	4,000	$2,300	.....	87
65	7,000	3,000	.....	93
85	10,000	3,700	.....	95

Standard Tractor Co., Brooklyn, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
B	12,000	$3,450	.....	97
D	20,000	4,250	.....	97

Steel, W. M., Worcester, Mass.

Model	Cap.	Chas. Price	Comp.	Page
C	4,000	$2,250	.....	87
B	6,000	3,000	.....	90
B A	8,000	3,500	.....	94
A	10,000	4,000	.....	95

Stegeman Motor Car Co, Milwaukee, Wis.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$2,250	.....	84
..	6,000	2,700	.....	89
..	8,000	3,400	.....	93
..	10,000	4,100	.....	95
..	14,000	4,600	.....	..

Sterling Motor Tk. Co., Milwaukee, Wis.

Model	Cap.	Chas. Price	Comp.	Page
..	1,500	$895	.....	78
..	4,000	2,800	.....	87
..	7,000	3,400	.....	93
..	10,000	4,500	.....	95
..	14,000	4,750	.....	97

Stewart Iron Works, Covington, Ky.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$700	.....	81

Stewart Motor Corp., Buffalo, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
6	1,500	$795	.....	78
3	2,000	1,390	.....	81
4	3,000	1,485	.....	84

Studebaker Corporation, Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
S F	1,000	$785	.....	77
7	2,000	1,100	.....	81

Sullivan Motor Tk. Corp., Rochester, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
G	3,000	$1,600	.....	84
E	4,000	2,250	.....	87

Tegetmeier & Riepe, New York, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
M	3,000	$2200	.....	83

Thomas Auto T. Co., Inc., New York City.

Model	Cap.	Chas. Price	Comp.	Page
40	5,000	$2,700	.....	89

Tiffin Wagon Co, Tiffin, O.

Model	Cap.	Chas. Price	Comp.	Page
A	1,500	$1,190	.....	78
A W	2,000	1,450	.....	81
G W	3,000	1,790	.....	84
M W	5,000	2,500	.....	89
M C	5,000	2,360	.....	89
P W	7,000	2,900	.....	93
R W	10,000	4,250	.....	95
S W	12,000	4,550	.....	96

Tower Motor Truck Co., Greenville, Mich.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$1,600	.....	87

Transport Tr. Co., Long Island City, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
T	10,000	$2,500	.....	97

Trumbull Motor Car Co, Philadelphia, Pa.

Model	Cap.	Chas. Price	Comp.	Page
16 D	500	$340	.....	76

Union Motor Truck Co, Bay City, Mich.

Model	Cap.	Chas. Price	Comp.	Page
B	5,000	$1,875	.....	89

United Motor Tk. Co., Grand Rapids, Mich.

Model	Cap.	Chas. Price	Comp.	Page
B S W	4,000	$2,250	.....	88
C S W	7,000	2,900	.....	93
..	8,000	3,200	.....	94
E S W	10,000	3,900	.....	95

United States Mot. Tk. Co., Cincinnati, O.

Model	Cap.	Chas. Price	Comp.	Page
E	5,000	$2,500	.....	90
H	5,000	2,800	.....	89
J	7,000	3,500	.....	93
D	7,000	3,200	.....	93
K	10,000	4,400	.....	95

Universal Service Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
G	3,000	$1,950	.....	84
D	4,000	2,800	.....	88
A	6,000	3,400	.....	91

Velie Motor Vehicle Co., Moline, Ill.

Model	Cap.	Chas. Price	Comp.	Page
23	1,500	$840	.....	..
25	3,000	2,250	.....	84
26	7,000	3,350	.....	93

Viall Motor Car Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
B 1½	3,000	$1,750	.....	88
B 2	4,000	2,000	.....	88
..	10,000	3,500	.....	96

Vim Motor Truck Co., Philadelphia, Pa.

Model	Cap.	Chas. Price	Comp.	Page
20	1,000	$645	.....	77

Volts Brothers, Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
E	6,000	$2,750	.....	91
T	10,000	3,600	.....	96

Walter Motor Truck Co., New York City.

Model	Cap.	Chas. Price	Comp.	Page
..	10,000	$4,750	.....	96
..	12,000	5,000	.....	96
..	15,000	5,250	.....	97
..	24,000	5,000	.....	97

Watson Wagon Co., Canastota, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
..	10,000	.....	.....	96

The White Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
G B B E	1,500	$2,100	.....	79
T B C	3,000	3,000	.....	84
T A D	6,000	3,700	.....	91
T C D	10,000	4,500	.....	96

Wichita Falls Mot. Co, Wichita Falls, Tex.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,350	.....	81
K	2,000	1,650	.....	81
L	3,000	1,800	.....	84
B	4,000	2,100	.....	88
M	4,000	2,100	.....	88
R	5,000	2,350	.....	90
O	7,000	3,250	.....	93
Q	10,000	3,850	.....	96

Wilcox Motor Co., H. E. Minneapolis, Minn.

Model	Cap.	Chas. Price	Comp.	Page
U	1,500	.....	.....	79
S	2,000	.....	.....	81
R	3,000	.....	.....	84
Q	4,000	.....	.....	88
P	7,000	.....	.....	93

Willingham's Sons, E G., Atlanta, Ga.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,350	.....	81
C	4,000	1,800	.....	87

Willys Overland Co., Toledo, O.

Model	Cap.	Chas. Price	Comp.	Page
75	750	$595	.....	76
83 B O E	1,200	800	.....	77

Wilson Co., J. C., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
E	4,000	$2,350	.....	88
G	6,000	2,650	.....	91

Winther Motor Truck Co., Kenosha, Wis.

Model	Cap.	Chas. Price	Comp.	Page
47	4,000	$2,250	.....	88
67	6,000	3,100	.....	91
87	8,000	3,600	.....	94
127	12,000	4,500	.....	96

Witt-Will Co., Inc., Washington, D. C.

Model	Cap.	Chas. Price	Comp.	Page
W D 2	4,480	$2,250	.....	88

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GASOLINE SPECIFICATION DEFINITIONS

The appended explanations or definitions of the terms and abbreviations used in compiling the specifications published on the following pages should be understood by all readers that they may thoroughly comprehend the detail presented in the tabulations. Statement may be made here that the S. A. E. has adopted a nomenclature that is intended to simplify the technical mechanical terms designating the different units and parts of automobile chassis as applied by engineers, which the manufacturers and their sales and service organizations are expected to use so far as is possible.

There is reasonable ground for assumption that through this usage the general public will be educated to the terms, so that eventually there will be practically uniform acceptance of them, and there will be common recognition of a type or method or size or system.

The fact that the specification items cannot be described by the one series of terms requires that the reader familiarize himself with the definitions, and when these are understood the detail can be quickly comprehended and comparisons can be made. One will note that the arrangement follows through the chassis systematically, taking the engine, clutch, transmission gearset, method of drive, rear axle, springs, wheels, tires and means of control in that order. The definitions follow:

MAKE—The trade or market name by which the chassis is known.

MODEL—This indicates the figures or letters by which the sizes are differentiated by the maker. In some instances there is no indication.

CAPACITY—This states the maximum load capacity in pounds, and assumes that the body weight will be carried in addition.

CHASSIS PRICE—The manufacturers have been asked to carefully revise these quotations. In some instances, where complete vehicle prices are given, these are so stated.

S. A. E. RATING—This gives the horsepower as found by the standard formula, which is the same as the A. L. A. M. and the N. A. C. C. formulae. In most instances these ratings will be increased in practical service, in some cases in excess of 44 per cent.

ENGINE CYLINDERS—This gives the number only and without exception these are all four-cycle. The type, whether L head, T head or I head, is not indicated.

HOW CAST—This specifies whether the cylinders are cast singly, in pairs, in triple units or in block form, but does not indicate the manner of casting the crank cases. In all instances where the cooling is by water the cylinder jackets are cast integral.

BORE-STROKE—This specifies the cylinder bore and the piston stroke in inches.

VALVE LOCATION—This specifies the side of the engine on which the valves are located, this construction requiring but a single camshaft, but where the term T head is used this means that the valves are on either side, but the exhaust and intake are not differentiated.

NUMBER MAIN BEARINGS—This does not indicate the type of bearings, but as a rule these are plain, annular ball bearings, being very rarely used

MAXIMUM R. P. M.—This states the highest or maximum engine speed claimed by the manufacturer. The vehicles or engines may be governed to considerably lower speeds.

LUBRICATION—Splash, defines a simple splash system without pump; splash and pressure, defines a system where the oil is supplied by pumpage and distributed in part by splash; pressure, defines any system where the lubricant is supplied wholly by pumpage; fuel, where the oil is mixed with the gasoline and injected through the carburetor.

COOLING SYSTEM—Water thermo, indicates cooling by a thermo-syphon system of water circulation; water pump, by a forced or pressure water circulation; in both instances through radiators; air, cooling by forced circulation of air.

RADIATOR—Tubular indicates any form of plain tube; fin.-t. cast., any form of finned tube cooling section and cast top and bottom tanks; fin.-t. sh., for finned tube cooling section and sheet metal tanks; cell. cast., for cellular cooling section and cast metal tanks; cell. sh., for cellular cooling section and sheet metal tanks; honeycomb and zig-zag tube cooling sections are classified as cellular.

CARBURETOR—The maker's name, and, in some instances the type, is given.

IGNITION—The name of the maker of the system, usually a magneto, and in some instances the type, is given.

CONTROL—This refers to the control of the ignition system, fixed indicating a fixed point for firing the cylinders; hand, for manual adjustment of the firing point, and auto, for automatic advance of retardation.

GOVERNOR—This specifies the manner of driving a governor, if this equipment is included, whether from the engine, gear set or vehicle wheel.

SPEED, M. P. H.—This specifies the maximum vehicle speed with the highest gear ratio.

CLUTCH TYPE—The designations are cone, which may be either fabric faced or metal to metal; dry disc (multiple disc) or dry plate which are used without lubricant; wet disc, which is used with lubricant; expanding shoe or contracting band.

TRANSMISSION GEARSET—This specifies whether selective, progressive, planetary or friction type.

LOCATED, SPEEDS—This indicates the location of the transmission gearset, Unit M as a unit with the engine; Unit A as a unit with the rear axle; Amid. as amidships, or independent of the engine or axle, and the numeral gives the number of forward speed ratios.

DRIVEN BY—Top worm, defines the David Brown type construction of worm shaft and worm wheel; int. gear, defines internal gear drive; bevel, defines bevel pinion and master gear; double chain, defines double side chains; double red., defines double reduction gearing; front worm, defines front wheels driven by worm shaft and worm wheel; front int. gear, defines front wheels driven by internal gears; four worm, defines four wheels driven by worm shafts and worm wheels; four int. gear, defines four wheels driven by internal gears; four bevel, defines four wheels driven by bevel gears.

RATIO GEAR REDUCTION—Specifies the reduction from the engine to the rear wheels when driven with the high gear ratio.

TORQUE TAKEN BY—This indicates whether the torque is taken by the springs, torque arm or member, torsion rods, radius rods or sub-frame.

PROPELLED BY—This defines whether the driving effort is given through the springs, torque member or radius rods.

SPRINGS FORWARD—This gives ½-ell. for semi or half-elliptical; elliptic for full elliptical; cross ½ ell. for transverse semi-elliptical.

SPRINGS, REAR—This gives ½-ell. for semi or half-elliptical; elliptic for full elliptical; platform for two longitudinal and one transverse semi-elliptic springs; cantilever for semi-elliptical installed to give cantilever suspension; ¾-ell for three-quarters elliptical, and jack is added for an auxiliary or cross spring.

WHEELBASE—Chassis length in inches between centres of front and rear axles.

TIRE TYPE—Pneu. for pneumatic; solid for cushion or solid bands; P. and S. for pneumatic and solid or mixed equipment; opt. for optional equipment.

TIRE SIZES—The forward tire sizes are given first and the rear last, with d added to the rear sizes to indicate dual shoes.

DRIVER'S SEAT—Right or left indicates the side of the chassis at which the seat and steering column are located.

CONTROL LEVERS—Right, left or centre, define the location of the gear shifting and emergency brake hand levers.

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, UNDER 1000 POUNDS.

Make	Maxwell	Overland	Packet	R S	Saxon	Trumbull
Model	25	75	Packet	.....	.....	16 D
Capacity	500	750	600	350	400	500
Chassis Price	$535	$595	$325	$305	$395	$340
S. A. E. Rating	21.08	15.6	18.00	9.12	12.08	13.37
Engine Cyls	Four	Four	Four	Two	Four	Four
How Cast	En block	Block	Block	Single	Block	Block
Bore, Stroke	3⅛x4½	3⅛x5	2¾x4	3⅜x3¾	2¾x4	2¾x4
Valve Location	Right	Right	L head	Back	Left	Right
No. Main Bear.	Two	Two	Two	Two	Two	Two
Max. R. P. M.	.....	.....	2000	3200	2000	2200
Lubrication	.....	Cir. spl.	Spl., pres.	Spl.	Cir. spl.	Cir. spl.
Cool. System	Thermo	Thermo	Thermo	Air	Thermo	Thermo
Radiator Type	Fin, sheet	Cell, sheet	Cellular	.....	Cell, sheet	Fin, sheet
Carburetor	K. D.	Tillotson	Carter	Schebler	Mayer	Zephyr
Ignition, Make	Simms	Splitdorf	At.-Kent	Bosch	At.-Kt.	Splitdorf
Type, Control	Dual, hand	Single, hand	Single, auto.	Single, hand	Single, auto.	Single, hand
Governor Drive	.....	.....	.....	.....	.....	.....
Speed, M. P. H.	.....	40	25	35	47	45
Clutch Type	Cone	Cone	.....	Wet disc	Dry disc	Cone
Trans. Gearset	Selective	Selective	Friction	Progressive	Progressive	Selective
Located, Speeds	Unit M, three	Unit X, three	Unit J, three	Amid., three	Unit X, three	Unit X, three
Driven by	Bevel	Bevel	Double chain	Single chain	Bevel	Bevel
Ratio Gear Red.	3.58-1	4.00-1	4.00-1	11.32-1	3.50-1	3.60-1
Tor. Taken by	Torque tube	Torsion tube	Radius rod	.....	Torsion tube	Torsion tube
Propelled by	Springs	Torsion tube	.....	Sub. f.	Torsion tube	Torsion tube
Springs, For.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	Cantilever	½ elliptic
Springs, Rear.	¾ elliptic	Cantilever	½ elliptic	elliptic	Cantilever	Cantilever
Wheelbase	103	104	100	65	96	80
Tire Type	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Tire Sizes	30x3½, 30x3½	31x4, 31x4	28x3, 28x3	28x3, 28x3	28x3, 28x3	28x3, 28x3
Driver's Seat	Left	Left	Left	Centre	Left	.....
Control Levers	Centre	Centre	Left	Centre	Centre	Centre

LOAD CAPACITY, 1000 POUNDS.

Make	Bauer	Bell	Briscoe	Corliss	Crece	Crowther-Dur.
Model	A	17	Light Delivery A		18	1917 L D
Capacity	1000	1000	1000	1000	1000	1000
Chassis Price	$720	.....	*$585	$800	$800	*$600
S. A. E. Rating	22.50	19.60	15.625	15.64	16.92	22.50
Engine Cyls	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Block
Bore, Stroke	3¾x5	3½x5	3⅛x5½	3⅛x4½	3⅛x5	3¾x4¼
Valve Location	Right	Left	Side, L head	Left	Right	Right
No. Main Bear.	Two	Two	Two	Two	Two	Three
Max. R. P. M.	1500	2000	3000	.....	1000	2800
Lubrication	Cir. spl.	Pressure	Cir. spl.	.....	Cir. spl.	Pressure
Cool. System	Centrifugal	Thermo	Thermo	Thermo	Centrifugal	Thermo
Radiator Type	Fin. sheet	Cellular	Cell. cast	Fin. sheet	Sq.T.-sheet	Fin. sheet
Carburetor	Bauer	Carter	Springless	Schebler	Rayfield	Optional
Ignition, Make	Optional	At.-Kt.	Connecticut	Dixie	Bosch	Disco
Type, Control	Dual, hand	Hand	Hand	Single, hand	Single, control	Single, hand
Governor Drive	.....	.....	.....	.....	.....	.....
Speed, M. P. H.	25	2 to 35	40	.....	25	35
Clutch Type	Wet disc	Disc	Cone	Dry disc	Dry disc	.....
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Rollers
Located, Speeds	Unit M, three	Unit M, 3	Unit X, 3	Unit M, three	Unit M, three	Unit J, three
Driven by	Double red.	Shaft & bevel	Bevel	Bevel	Bevel	Rollers
Ratio Gear Red.	.....	4.25-1	4.23-1	4.15-1	.....	5.00-1
Tor. Taken by	Tor. arm	Torque tube	Torque rods	Torque tube	Springs	Torsion tube
Propelled by	Tor. arm	.....	Springs	Torque tube	Springs	Sub.-f.
Springs, For.	½ elliptic	½ elliptic	Elliptic	.....	½ elliptic	½ elliptic
Springs, Rear.	Elliptic	¾ elliptic	Elliptic	.....	½ elliptic	¾ elliptic
Wheelbase	100	112	104	100	104	110
Tire Type	Solid	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Tire Sizes	36x2½, 36x2½	31x4, 31x4	30x3½, 30x3½	31x4, 31x4	32x4, 32x4	32x3½, 32x3½
Driver's Seat	Left	Left	Left	Left	Left	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 1000 POUNDS.

Make	Dart	Detroit	Duryea	Economy	Ellsworth	Hanger	Hannibal	I. H. C.	I. H. C.	Kearns	Kosmath	Lambert
Model	B B	B	A, B or C	.....	25-A	B	A	M A	M W	D	15	V 1
Capacity	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Chassis Price	$1200	.....	$600	$795c	$695c	$875	$550	$600	$710	.....	$675	$900
S. A. E. Rating	19.60	22.50	19.00	22.5	16.92	16.92	16.92	20.00	16.20	16.9	15.65	19.61
Engine Cyls	Four	Four	Two	Four	Four	Four	Four	Two	Two	Four	Four	Four
How Cast	Block	Block	Single	Block	Block	Block	Block	Single	Single	Block	Block	Pairs
Bore, Stroke	3½x5½	3¾x4½	3¾x3¾	3¾x4½	3¼x5	3¼x5	3¼x4¼	5x5	4½x5	3¼x5	3½x4½	3½x4¼
Valve Location	Right	Left	Two cycle	.....	Right	Left	.....	Head	Top	.....	Right	Left
No. Main Bear.	Three	Three	Four	.....	Two	Two	.....	Two	Two	Two	Two	Three
Max. R. P. M.	1800	2800	3000	.....	.....	1600	.....	.....	1300	3000	.....	1700
Lubrication	Spl. pres.	Cir. spl.	Fuel	Spl., pres.	Thermo	Cir. spl.	Spl. pres.	Splash	Spl. pres.	Spl. pres.	Sel. pres.	Cir. spl.
Cool. System	Thermo	Thermo	Air	Thermo	Sq.-t. sheet	Thermo	Thermo	Air	Centrifugal	Thermo	Thermo	Centrifugal
Radiator Type	Cellular	Cell. sheet	None	Cell. sheet	Carter	Cell. sheet	Cell. sheet	.....	Fin. sheet	Cellular	Fin. sheet	Fin. sheet
Carburetor	Stromberg	Optional	Kingston	Optional	Storage	Stromberg	Zenith	Schebler	Holley	Carter	Holley	Schebler
Ignition, Make	Eisemann	Dixie	Bosch	H-t-m	Single, hand	K-W.	At.-Kt.	Heinze	Heinze	Connecticut	At.-Kt.	Bosch
Type, Control	Single, fixed	Single, hand	Single, hand	Single, hand	.....	Single, hand	Single	Dual, hand	Dual, hand	Hand	Single, auto.	Dual, hand
Governor Drive	.....	.....	.....	.....	.....	.....	.....	.....	Motor	.....	.....	.....
Speed, M. P. H.	20	58	30	.....	.....	25	.....	.....	18	35	30	20
Clutch Type	Dry disc	Wet disc	.....	Wet disc	Cone	Cone	Selective	Cont. B.	Cont. B.	Dry disc	Dry plate	None
Trans. Gearset	Selective	Selective	Rollers	Selective	Selective	Selective	Unit M. three	Ind. C.	Ind. C.	Selective	Selective	Friction
Located, Speeds	Unit M, three	Unit M three	Unit M, two	Unit M, three	Unit M, three	Unit M, three	.....	Amid., two	Amid., two	Unit M. three	Unit M, three	Friction
Driven by	Top worm	Bevel	Rollers	Bevel gear	Bevel	Top worm	.....	Double chain	Double chain	Shaft	Bevel	Double chain
Ratio Gear Red.	5.80-1	4.25-1	10.00-1	.....	4.46-1	6.20-1	.....	9.10-1	9.10-1	5.00-1	.....	.....
Tor. Taken by	Springs	Torsion arm	Sub.-f.	Springs	Torque tube	Springs	.....	.....	.....	Springs	Torsion tube	.....
Propelled by	Springs	Springs	Sub.-f.	Springs	Springs	Springs	.....	Radius rod	Radius rod	Springs	Springs	Radius rod
Springs, For.	½ elliptic	½ elliptic	¼ elliptic	½ elliptic	.....	½ elliptic	Elliptic	Elliptic	Elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear.	½ elliptic	Cantilever	½ elliptic	Cantilever	.....	½ elliptic	Cantilever	Elliptic	Elliptic	½ elliptic	½ elliptic	¾ elliptic
Wheelbase	124	112	84	106	108	110	106	90	90	107	100	106
Tire Type	Pneumatic	Pneumatic	Solid	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Solid	Solid	Pneumatic	Pneumatic	Pneumatic
Tire Sizes	34x4½, 34x4½	32x3½, 32x3½	38x1¾, 42x1¾	30x3½	30x3½, 30x3½	32x4, 32x4	30x3½, 30x3½	42x2, 42x2	36x2, 36x2	30x3½, 31x4	32x3½, 31x4	30x3½, 31x4
Driver's Seat	Left	Left	Left	Left	Left	Left	.....	Right	Right	Left	Left	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	.....	Right	Right	Centre	Centre	Right

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 1000 POUNDS.

Make	Lexcina	Lip. Stewart	Mercury	New London	Pennsy	Pullman	Rainier	Reece	Rush	Studebaker	Vim
Model	W	M	P	25	15	424 L. D.	.....	A	D	S F	20
Capacity	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Chassis Price	.....	$1000	$650	$575	$660	.....	$875	*$750	$735	$785	$645
S. A. E. Rating	23	16.90	14.50	.....	27.20	22.50	16.92	.....	16.9	24.32	14.40
Engine Cyls	Four	Four	Two	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	.....	Block	Single	Block	Block	Block	Block	Block	Block	Block	Block
Bore, Stroke	3¾x4½	3½x5	4¼x4	3¼x4	4½x4½	3¾x4½	3¼x4½	3½x5	3¼x5	3⅞x5	3x4½
Valve Location	L head	Left	Top	Left	Right	Left	Left	.....	Right	Left	Right
No. Main Bear.	Three	Two	Two	Three	Two	Three	Two	.....	Two	Three	Three
Max. R. P. M.	2800	1800	.....	.....	2200	2800	2500	.....	1800	1800	2000
Lubrication	Cir. spl.	Spl. pres.	Cir. spl.	Splash pump	Spl., pres.	Spl. cir.	Spl., pres.	Splash	Splash	Cir. spl.	Spl. pres.
Cool. System	Thermo	Thermo	Air	Thermo	Thermo	Thermo	Thermo	Thermo	Thermo	Centrifugal	Thermo
Radiator Type	.....	Cell. sh.	.....	Cellular	Fin. sheet	Cellular	Fin. sheet.	Cell. sheet	Cellular	Fin. cast.	Tubular
Carburetor	.....	Zenith	Schebler	Zenith	Zenith	Stromberg	Carter	Schebler	Carter	Schebler	Zenith
Ignition, Make	At.-Kt.	Berling	Remy	Connecticut	Dixie	Dixie	Dixie	Dixie	Connecticut	Bat., Willard	Dixie
Type, Control	.....	Fixed	Dual, 2-pt.	Auto., hand-	Single, fixed	Hand	Single, hand	.....	Hand	Single, hand	Single, hand
Governor Drive	.....	None	.....	.....	.....	.....	.....	.....	.....	.....	.....
Speed, M. P. H.	.....	25	.....	28	42.50	35	42	25	35	.....	25
Clutch Type	Disc	Cone	Dry disc	Multiple disc	Dry disc	Wet disc	Dry plate	Multiple disc	Cone	Cone	Cone
Trans. Gearset	.....	Selective	Planetary	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	....., three	Amid., three	Unit M, two	Amid., three	Unit M, three	Unit M	Unit M, three	Unit M, 3	Unit M, 3	Unit X, three	Unit M, three
Driven by	.....	Top worm	Double chain	Shaft	Bevel	Bevel	Worm	.....	Bevel gear	Bevel	Bevel
Ratio Gear Red.	.....	5.80-1	9.00-1	5.00-1	4.75-1	4.25-1	5.80-1	.....	4.41-1	4.58-1	5.25-1
Tor. Taken by	Truss rod	Springs	.....	Springs	Springs	Torque arm	Springs	.....	Springs	Torsion arm	Springs
Propelled by	.....	Springs	Radius rod	Shaft & bevel	.....	Springs	Springs	.....	Springs	Radius rod	Springs
Springs, For	½ elliptic	½ elliptic	elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	¾ elliptic	½ elliptic
Springs, Rear	Cantilever	½ elliptic	elliptic	Cantilever	.....	Cantilever	½ elliptic	½ elliptic	½ elliptic	¾ elliptic	½ elliptic
Wheelbase	112	106	85	106	98	114	115	110	104	112	102
Tire Type	.....	Pneumatic	Solid	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Tire Sizes	32x3½, 32x3½	33x4, 33x4	34x2, 36x2	30x3½, 30x3½	30x3½, 31x4	31x4	33x4, 33x4	31x4, 31x4	31x4, 31x4	34x4, 34x4	31x4, 31x4
Driver's Seat	Left	Left	Right	Left	Left	Left	Left	Left	Left	Left	Left
Control Levers	Centre	Centre	Right	Left	Centre	Centre	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 1200 TO 1500 POUNDS.

Make	Chadwick	Henderson	Old Hickory	Overland	Atlas	Bauer	Bollstrom	Champion	Chase	Collier	Commerce	D-E
Model	21	C	M	83 B O E	17	B	A	25	T	M	N	.....
Capacity	1200	1200	1250	1200	1500	1500	1500	1500	1500	1500	1500	1500
Chassis Price	$650	$1125	$825	$800	$750	$840	$1200	$875	$1500	$800	$875	$975
S. A. E. Rating	16	19.61	16.92	27.20	.....	22.50	15.64	17	19.61	16.92	19.61	15.6
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	.....	Block	Block	Block	Block	Block	Pairs	Block	Block	Block	Block	Block
Bore, Stroke	3½x4½	3½x5	3¼x5	4½x4½	3¼x5	3¾x5	3½x5¼	3¼x5	3½x5	3¼x5	3½x5	3½x4½
Valve Location	Side	Left	Right	Left	.....	Right	Head	Right	Right	Right	Left	Left
No. Main Bear.	Two	Three	Two	Five	Two	Two	Three	.....	Three	Three	Three	Two
Max. R. P. M.	2200	2000	2000	.....	1600	1500	1200	.....	1200	29	2000	1800
Lubrication	Pressure	Cir. spl.	Cir. spl.	Cir. spl.	Spl., pres.	Cir. spl.	Cir. spl.	Force F.	Cir. spl.	Splash	Spl., pres.	Spl., pres.
Cool. System	Thermo	Thermo	Thermo	Thermo	Thermo	Centrifugal	Centrifugal	Thermo	Thermo	Thermo	Thermo	Thermo
Radiator Type	Cellular	Cellular	Cell. sheet	Cellular	.....	Fin. sheet	Cell. sheet	Ver. tube	Fin. sheet	Cellular	Fin. cast.	Fin-t-sh.
Carburetor	.....	Stromberg	Carter	Tillotson	Carter	Bauer	Schebler	Carter	Stromberg	Zenith	Zenith	Schebler
Ignition, Make	.....	Bosch	Conn.	.....	Dixie	Optional	.....	Connecticut	Bosch	Conn.	Eisemann	Dixie 44
Type, Control	.....	Single, fixed	Single, hand	Hand	Dual, hand	Dual, hand	Hand	Hand	Single, fixed	Single, hand	Single, fixed	Hand
Governor Drive	.....	.....	.....	.....	.....	.....	.....	.....	Motor	.....	.....	.....
Speed, M. P. H.	20	32	16	40	25 to 30	25	18	35	20	35	30	30
Clutch Type	Disc	Dry disc	Cone	Cone	Dry disc	Wet disc	Wet disc	Disc	Dry disc	Dry plate	Cone	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit M, three	Unit M, three	Unit M, three	Unit X, three	.....	Unit M, three	Unit M, three	....., Three	Unit M, three	Unit M, three	Unit M, three	Unit, three
Driven by	.....	Top worm	Bevel	Bevel	.....	Double red.	Int.-G.-4	Bevel	Top worm	Bevel	Bevel	Top worm
Ratio Gear Red.	.....	5.8-1	6.00-1	4.00-1	.....	.....	6.00-1	5.50-1	7.80-1	6.00-1	6.00-1	6.20-1
Tor. Taken by	Springs	Springs	Torque tube	Torque tube	.....	Tor. arm	Tor. arm	Springs	Springs	Torque arm	Tor. arm	Springs
Propelled by	Springs	Springs	Torque tube	Torque tube	.....	Tor. arm	Tor. arm	Springs	Springs	Springs	Springs	Springs
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	Scroll elliptic	½ elliptic	½ elliptic	Elliptic	¾ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	102	106	112	106	106	110	125	114	125	118	120	108
Tire Type	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Solid	Pneumatic	Pneumatic	Solid	Pneumatic	Pneumatic	Pneumatic
Tire Sizes	31x4, 31x4	34x4, 34x4	33x4, 33x4	33x4½, 33x4½	31x4, 31x4	36x2½, 36x2½	35x4½, 35x4½	32x3½, 33x4	36x2½, 36x3½	32x4, 32x4	34x4, 34x4	32x4, 36x7
Driver's Seat	Left	Left	Left	Left	Left	Left	Left	Left	Right	Left	Left	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 1500 POUNDS.

Make	Dispatch	Gabriel	G. M. C.	Geneva	Hewitt-Ludlow	Hoover	I. H. C.	Jeffery	KisselKar	Kleiber	Lane	Lawson
Model	L	B	15	I	.....	15-A	E	1016	.....	AA	A	.....
Capacity	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Chassis Price	$1100	$800	$1150	$750	$1650	$1190	$960	$965	$950	$1600	$1075	.....
S. A. E. Rating	22.50	22.00	19.61	22.10	20	23	16.20	22.50	24.03	22.50	16.92	20
Engine Cyls	Four	Four	Four	Two	Four	Four	Two	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Single	.....	Block	Single	Block	Block	Block	Block	.....
Bore, Stroke	3¾x5	3½x5	3½x5	5¼x4½	3½x5½	3¾x4¼	4½x5	3¾x5½	3⅞x5½	3¾x5¼	3¼x5	3½x5
Valve Location	Left	Left	Right	Head	.....	L head	Top	Right	Right	Left	Left	.....
No. Main Bear.	Three	Three	Three	Two	.....	Three	Two	Three	.....	Three	Two	.....
Max. R. P. M.	2200	1000	1500	1200	.....	2800	1300	2400	1060	1300	.....	.....
Lubrication	Pressure	Cir. splash	Spl. pres.	Spl. pres.	.....	Spl., pres.	Spl. pres.	Spl. pres.	Cir. spl.	Spl. pres.	.....	.....
Cool. System	Thermo	Centrifugal	Centrifugal	Gear	Thermo	Thermo Syp.	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Thermo	Thermo
Radiator Type	Cell. sheet	Cell. sheet	Fin.-t. sheet	Fin. sheet	.....	Cellular	Thin sheet	Cell. cast	Sq.-t. sheet	Cell. cast.	Fin. cast	.....
Carburetor	Rayfield	Carter	Marvel	Schebler	Stromberg	Schebler	Holley	Stromberg	Stromberg	Schebler	Shakespeare	.....
Ignition, Make	Bosch	Dixie	Eisemann	Simms	Remy	Dixie	Bosch	Dixie	Eisemann	Bosch	G. & D.	Splitdorf
Type, Control	Single, hand	Single, hand	Single, hand	Single, fixed	.....	Spark, throttle	Single, hand	Hand	Single, hand	Hand	Single, hand	.....
Governor Drive	Motor	.....	Motor	.....	.....	.....	Motor	.....	Motor	Motor	.....	.....
Speed, M. P. H.	25	25	20	18	.....	20-25	14½	40	22	20	.....	.....
Clutch Type	Control unit	Disc	Cone	Dry disc	Disc	Wet disc	Cone B	Dry plate	Cone	Wet disc	Wet disc	Disc
Trans. Gearset	Control unit	Selective	Selective	Planetary	Selective	.....	Ind. C.	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit A, four	Unit, three	Amid., three	Unit J, two	....., three	.....	Amid., two	Unit M, three	Unit M, three	Amid., three	Unit M, three	....., three
Driven by	Inter. chains	Bevel	Bevel	Double chain	.....	Top worm	Double chain	Spiral bevel	Bevel	Top worm	Worm	.....
Ratio Gear Red.	3.12-1	6.00-1	6.00-1	4.00-1	.....	6.20-1	9.10-1	4.50-1	4.58-1	6.50-1	6.20-1	.....
Tor. Taken by	Springs	Torque arm	Torsion tube	Driving shaft	.....	Springs	.....	Springs	Springs	Springs	Springs	.....
Propelled by	Radius rod	Springs	Torsion tube	Radius rod	.....	Springs	Radius rod	Springs	Springs	Springs	Springs	.....
Springs, For	Elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	.....
Springs, Rear	Elliptic	½ elliptic	elliptic	Elliptic	.....	½ elliptic	Elliptic	½ elliptic	½ elliptic	½ elliptic	.....	.....
Wheelbase	120	118	122	96	124	120	102	116	120	130	120	120
Tire Type	Pneumatic	Pneumatic	Pneumatic	Solid	.....	Pneumatic	Solid	Pneumatic	Pneumatic	Optional	Solid	.....
Tire Sizes	34x4	33x4	35x5	34x2, 36x2½	34x3, 34x4	32x4, 33x4½	40x2½, 40x3	35x4½, 35x4½	32x4, 32x4	34x3½, 34x5	34x3, 34x4	34x4, 34x4
Driver's Seat	Right	Left	Left	Right	Left	.....	Right	Left	Left	Right	Left	Left
Control Levers	Right	Centre	Centre	Right	Centre	Centre	Right	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 1500 POUNDS.

Make	Lincoln	Lip. Stewart	Menominee	Palmer Moore	Paulding	Reo	Republic	Sanford	Selden	Sterling	Stewart B	Tiffin
Model	D	W	E W	K	D 1	F	Dispatch 9	O	G	.....	6	A
Capacity	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Chassis Price	$900	$1600	$1295	$1150	$975	$925	$750	$1290	$985	$895	$795	$1190
S. A. E. Rating	22.50	22.50	22.50	19.61	16.92	27.20	16.90	19.61	15.64	15.64	14.40	19.61
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Pairs	Block	Block	Block	Block	Block	Block
Bore, Stroke	3¾x5	3¾x5¼	3¾x5	3½x5½	3¼x5	4⅛x4½	3¼x5	3½x5½	3⅛x4½	3⅛x4½	3x4¼	3½x5
Valve Location	Head	Left	Right	R. & H.	Right	R. & H.	Right	Right	Right	Right	Head	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Two	Three	Two	Two	Two	Three
Max. R. P. M.	1500	1800	2000	1275	1000	.....	.....	1500	1200	1333	2400	1000
Lubrication	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.	Cir. spl.	Spl., pres.	Spl., pres.	.....	Cir. spl.	Cir. spl.	Spl. pres.
Cool. System	Thermo	Water pump	Thermo	Thermo	Thermo	Centrifugal	Thermo	Ther. syp.	Thermo	Thermo	Thermo	Thermo
Radiator Type	Fin. cast.	Cell. sheet	Fin. sheet	Fin. cast.	Z-Z-t. sheet	Fin.-t. sh.	Cell. cast	Fin.-t. cast	Sq-t-sheet	Fin. cast.	Vertical tube	Fin. sheet
Carburetor	Stromberg	Zenith	Stromberg	Zenith	Kingston	Johnson	.....	Schebler	Schebler	Schebler	Zenith	Schebler
Ignition, Make	Bosch	Eisemann	Bosch	Bosch	Kingston	Remy	Bosch	Splitdorf	Dixie	Bosch	Dixie	Bosch
Type, Control	Single, fixed	Fixed	Single, hand	Single, auto.	Dual, hand	Single, hand	Single, fixed	Single, fixed	Single, fixed	Single, hand	.....	Single, hand
Governor Drive	.....	Motor	D. shaft	Motor	.....	.....	.....	.....	Motor	.....	25	Motor
Speed, M. P. H.	.....	20	25	20	18	22	20	18	20	20	Dry plate	18
Clutch Type	Cone	Cone	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Selective	Cone
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Unit M, three	Selective
Located, Speeds	Unit M, three	Amid., three	Unit M, three	Amid., three	Unit M, three	Amid., three	Unit M, three	Unit M, three	Unit M, three	Unit M, three	Integral gear	Unit M, three
Driven by	Bevel	Top worm	Sp. bev.	Int. gear	Int. gear	Bevel	Internal gear	Int. gear	Worm	Top worm	6.00-1	Int. gear
Ratio Gear Red.	6.00-1	6.00-1	6.00-1	6.83-1	6.00-1	4.30-1	5.31-1	6.83-1	6.20-1	7.00-1	Springs	6.50-1
Tor. Taken by	Torsion arm	Springs	Springs	Torsion arm	Springs	Torsion arm	Springs	Springs	Springs	Springs	Springs	Springs
Propelled by	Springs	Springs	Radius rod	Springs	Springs	Springs	Springs	Springs	Springs	Springs	½ elliptic	½ elliptic
Springs, For	Elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	Elliptic	½ elliptic	½ elliptic	½ elliptic	Platform	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	110	110
Wheelbase	122	125 or 135	124	106	120	120	110	120	110	127	Pneumatic	Pneumatic
Tire Type	Pneumatic	Pneumatic	Solid	Solid	Solid	Pneumatic	Optional	Optional	Pneumatic	Pneumatic	32x4	35x4½, 35x4½
Tire Sizes	33x5, 33x5	35x4½, 35x4½	34x3½, 34x3½	36x3, 36x3½d	36x3, 36x3	34x4½, 34x4½	34x3, 34x3½	34x4½, 35x5	32x2½, 33x4	34x4, 34x4	Left	Left
Driver's Seat	Left	Left	Left	Left	Left	Left	Left	Left	Right	Left	Centre	Centre
Control Levers	Centre	Centre	Centre	.....	Centre	Centre	Centre	Centre	Centre	Centre		

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 1500 AND 2000 POUNDS.

Make	White	Wilcox	Acme	Atterbury	Auto Truck	Available	Barker	Bessemer	Bessemer	Brinton	Brockway	Buick
Model	G B B E	U	B	6 B	A	A	U	G	J	11	O	D-4
Capacity	1500	1500	.000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Chassis Price	$2100	.....	1575	$1875	$1350	$1700	$2000	$1075	$1985	$995	$1500	$1150
S. A. E. Rating	22.50	19.61	9.61	22.50	20	22.50	25.60	19.61	27.20	18.00	19.60	22.50
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	.....	Block	Block	Block	Block	Block	Block	Pairs
Bore, Stroke	3¾x5⅛	3½x5	3½x5	3¾x5¼	3½x5⅛	3¾x5	4x5	3½x5	4⅛x5¼	3¼x5	3½x5	3¾x5
Valve Location	Right	Left	Left	Left	.....	Right	Left	Right	Left	Left	Left	Head
No. Main Bear.	Two	Three	Three	Three	.....	Three	.....	Three	Three	Two	Three	Three
Max. R. P. M.	.....	1500	1700	1200	.....	1200	1500	1260	1090	1200	1350	.....
Lubrication	Spl. pres.	Cir. spl.	Spl., pres	Cir. spl.	.....	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.
Cool. System	Centrifugal	Thermo	Thermo	Centrifugal	Thermo	Thermo	Thermo	Thermo	Water pump	Thermo	Thermo	Centrifugal
Radiator Type	Cell. sheet	Cellular	Fin. sheet.	Fin. cast.	.....	Cell. sheet	Cell. sheet	Cell. cast.	Cellular	Tubular	Fin. cast	Cell. sheet
Carburetor	White	Optional	Rayfield	Zenith	Stromberg	Stromberg	Stromberg	Zenith	Rayfield	Rayfield	Schebler	Marvel
Ignition, Make	Eisemann	Bosch	Eisemann	.....	Eisemann	Bosch	Eisemann	Dixie	Bosch	Optional	Bosch	Delco
Type, Control	Single, hand	Single, hand	Single, hand	Single, fixed	.....	Single, fixed	Single, auto.	Single, hand	Hand	Single, hand	Single, fixed	Sin., auto.-h.
Governor Drive	.....	Motor	Motor	Motor	.....	.....	.....	.....	Engine	.....	Motor	.....
Speed, M. P. H.	.....	20	22	16½	.....	18	27	21	15	20	18	.....
Clutch Type	Wet plate	Dry disc	Dry disc	Dry plate	Disc	Dry disc	Dry plate	Dry disc	Cone	Dry disc	Dry disc	Cone
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Amid., four	Unit M, three	Unit M, three	Unit M, four	....., three	Unit M, three	Unit M, four	Unit M, three	Amid., three	Unit M, three	Unit M, three	Unit M, three
Driven by	Bevel	Top worm	Worm	Top worm	Int. gear	Top worm	Top worm	Int. gear	Internal gear	Top worm	Top worm	Bevel
Ratio Gear Red.	.....	6.20-1	7.75-1	7.75-1	.....	7.00-1	.....	7.00-1	8.00-1	6.20-1	7.50-1	6.60-1
Tor. Taken by	Springs	Springs	Springs	Springs	.....	Springs	Springs	Springs	Springs	Springs	Springs	Torsion tube
Propelled by	Radius rod	Springs	Springs	Springs	.....	Springs	Springs	Springs	Springs	Springs	Radius rod	Torsion tube
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	Elliptic
Wheelbase	133½	120	130	140½	114	132	130	124	160	122	124	122
Tire Type	Pneumatic	Pneumatic	Pneumatic	Solid	.....	Solid	Solid	Solid	Solid	Pneumatic	P. or S.	Pneumatic
Tire Sizes	34x4½, 34x4½	35x4½, 35x4½	34x3, 34x4	36x3½, 36x5	.....	36x3½, 36x4	42x3½, 42x5	34x3, 34x3½	36x4, 36x4d	33x4, 33x4	34x3½, 34x4	35x5, 35x5
Driver's Seat	Left	Left	Left	Right	Left	Left	Left	Left	Left	Left	Left	Left
Control Levers	C. & L.	Centre	Centre	Right	Right	Centre	Centre	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 2000 POUNDS.

Make	Chase	Commerce	Continental (C)	Corbitt	Dart	D-E	Denby	Diamond T	Federal	Forschler	Gabriel	Garford
Model	\	E	C A 1	E	E	.....	12	J 5	S	A O	C	75
Capacity	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Chassis Price	$1725	$1175	$1550	$1300	$1850	$1250	$1275	$1550	.....	$1650	$1600	$1750
S. A. E. Rating	19.61	19.61	22.50	22.50	22.50	19.60	19.61	19.61	19.61	19.61	27.20	19.61
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Pairs	Block	Block	Block	Block	Block	Block	Block	Block	Block
Bore, Stroke	3½x5¼	3½x5	3¾x5¼	3¾x5	3¾x5⅛	3½x5	3½x5	3½x5	3½x5⅛	3½x5	4⅛x5¼	3½x5⅛
Valve Location	Right	Left	Left	Left	Right	Left	Right	Right	Right	Right	Left	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Five	Three	Three	Three
Max. R. P. M.	1200	1383	.....	2000	1800	1250	1375	.....	1067	1200	1200	1000
Lubrication	Spl. pres.	Spl. & Force	Cir. spl.	Cir. Spl.	Spl. pres.	Spl., pres.	Cir. spl.	Cir. spl.	.....	Spl., pres.	Cir. splash	Cir. spl.
Cool. System	Thermo	Thermo	Centrifugal	Thermo	Thermo	Thermo	Thermo	Thermo	Centre	Centrifugal	Centrifugal	Thermo
Radiator Type	Fin. sheet	Fin. cast.	Fin. cast.	Cellular	Cellular	Fin-t-cast	Cell. cast	Cellular	Fin. sheet	Sq-t-sheet	Cell. sheet	Cell. sheet
Carburetor	Stromberg	Zenith	Stromberg	Stromberg	Stromberg	Zenith	Zenith	Rayfield	Zenith	Zenith	Rayfield	Rayfield
Ignition, Make	Bosch	Remy	Eisemann	Eisemann	Eisemann	Dixie	Splitdorf	Bosch	Eisemann	Bosch	Bosch	Dixie
Type, Control	Single, fixed	Single, hand	Single, fixed	Hand	Single, fixed	Hand	Single, fixed	Single, fixed	Single, fixed	Single, fixed	Single, hand	Single, hand
Governor Drive	Motor	Drive shaft	Motor	Motor	.....	Gearset	Motor	.....	Motor	Motor	.....	Motor
Speed, M. P. H.	.....	20	.....	18	20	16	16	18	18	16	28	17
Clutch Type	Disc	Cone	Dry disc	Dry disc	Wet disc	Dry plate	Dry plate	Dry disc	Dry plate	Dry disc	Cone	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit M, three	Unit M, three	Unit M. three	Unit M, three	Unit M. three	Unit, three	Unit M, three	Unit M, three	Amid., three	Unit M. three	Amid., three	Unit M, three
Driven by	Top worm	Internal gear	Top worm	Top worm	Top worm	Top worm	Int. gear	Top worm	Worm	Worm	Bevel	Top worm
Ratio Gear Red.	7.80-1	7.00-1	7.75-1	6.50-1	7.75-1	7.33-1	8.20-1	7:75-1	6.00-1	7.75-1	4.25-1	6.50-1
Tor. Taken by	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Torsion arm	Springs
Propelled by	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Radius rod	.....	Springs	Springs
Springs, For	½ elliptic	½ elliptic	¼ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	.....	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	¼ elliptic	½ elliptic	¼ elliptic	¼ elliptic	½ elliptic	½ elliptic	.....	.....	½ elliptic	½ elliptic
Wheelbase	138	126	120, 144, 168	130	130	128	124	126, 132	132	130	126, 136	120
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Pneu., cushion	P. & S.
Tire Sizes	36x3½, 36x5	34x3, 34x4	34x3, 36x4	34x3½, 34x4	34x3½, 34x5	34x3½, 34x4	34x3, 34x4	36x3, 36x4	34x3, 34x4	34x3, 34x4	35x5	34x4½, 36x4
Driver's Seat	Right	Left	Left	Left	Left	Left	Left	Left	Left	Left	Left	Right
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 2000 POUNDS.

Make	Gary	Gramm-Bern.	Hahn	Henderson	Hewitt-Ludlow	I. H. C.	Independent	Indiana	KisselKar	Koehler	Landshaft	Lange
Model	F	.....	C	D	.....	F	F	S	.....	K	G 1	C
Capacity	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Chassis Price		$1750	$1750	$1500	$1800	$1500	$1385	.....	$1250	$895	$1250	$1950
S. A. E. Rating	22.50	19.61	22.00	22.50	20	19.61	19.61	19.60	24.03	19.60	19.61	22.50
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	.....	Block	Block	Block	Block	Block	Block	Block
Bore, Stroke	3¾x5⅛	3⅛x5¼	4⅛x5⅛	3¾x5	3⅛x5⅛	3⅛x5¼	3⅛x5	3⅛x5⅛	3⅜x5½	3½x5	3½x5⅛	3¾x5¼
Valve Location	Right	Right	Left	Right	.....	Right	Right	Right	Right	Head	Right	Left
No. Main Bear.	Three	Three	Three	Three	.....	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1500	1100	1175	2000	.....	1350	1350	1800	1100	2150	1000	1250
Lubrication	Spl. pres.	Cir. spl.	.....	Cir. spl.	.....	Spl. pres.	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.	Cir. spl.	Cir. spl.
Cool. System	Thermo	Thermo	Centrifugal	Thermo	Thermo	Centrifugal	Thermo	Centrifugal	Centrifugal	Thermo	Thermo	Thermo
Radiator Type	Cellular	Fin.-t. cast.	Sq.-t. sheet	Cellular	.....	Fin. sheet	Z-Z-t. sheet	Fin.-t. cast.	Sq.-t. sheet	Fin. cast.	Sq.-t. sheet	Cell. sheet
Carburetor	Stromberg	Zenith	Stromberg	Stromberg	Stromberg	Holley	Marvel	Stromberg	Stromberg	Optional	Rayfield	Stromberg
Ignition, Make	Eisemann	Eisemann	Bosch	Bosch	Remy	Bosch	Eisemann	Bosch	Eisemann	Optional	Swiss	Bosch
Type, Control	Fixed	Single hand	Dual, hand	Single, fixed	Disc	Single, hand	Single, fixed	Single, fixed	Single, hand	Single, hand	Single, hand	Single, hand
Governor Drive	.....	Motor	Motor	.....	.....	Motor	Motor	Motor	Motor	.....	.....	Motor
Speed, M. P. H.	15	17.1	18	25	.....	17	18	20	17	30	15	15
Clutch Type	Dry disc	Dry disc	Dry disc	Dry disc	.....	Cone	Dry disc	Dry disc	Dry disc	Dry plate	Dry disc	Wet disc
Trans. Gearset	Selective	Ind. C.	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Ind. C.
Located, Speeds	Unit M, three	Amid., three	Unit M, three	Unit M, three	....., three	Amid., three	Unit M, three	Unit M. three	Unit M, three	Unit M, three	Unit M, three	....., three
Driven by	Top worm	Top worm	Worm	Top worm	.....	Int. gear	Top worm	Top worm	Top worm	Int. gear	Int. gear	Double chain
Ratio Gear Red.	7.80-1	6.50-1	7.00-1	8.25-1	.....	8.00-1	7.75-1	7.75-1	6.50-1	7.00-1	7.00-1	8.00-1
Tor. Taken by	Springs	Springs	Springs	Springs	.....	Springs	Springs	Springs	Springs	Springs	Springs	.....
Propelled by	Springs	Springs	Springs	Springs	.....	Springs	Springs	Springs	Springs	Springs	Springs	Radius rod
Springs, For	½ elliptic	½ elliptic	.....	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	.....	½ elliptic	.....	Platform	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	130	124	176	124	126	128	128	130	132	129	124	130
Tire Type		Solid	Solid	Pneumatic	.....	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x3½, 36x4	34x3½, 34x4	36x3½, 36x5	35x5, 35x5	34x3, 34x4	37x3½, 37x4	36x3, 36x4	36x3½, 36x4	34x3, 34x4	34x3, 34x3½	34x3½, 36x4	36x3½, 38x4
Driver's Seat	Left	Left	Centre	Left	Left	Left	Left	Left	Left	Right	Left	Left
Control Levers	Centre	Centre	Centre	.....	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 2000 POUNDS.

Make	Larrabee	Lip. Stewart	Little Giant	Little Giant	Lombard	Mack	Mack	Menominee	Modern	Moreland	Nel. & Le Moon	Niles
Model	M	H	15	H	.....	A B	A B	F W	T	.....	E 1	B
Capacity	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Chassis Price	$1600	$2000	$1500	$1400	.....	$2150	$2150	$1575	.....	$1500	$1700	.....
S. A. E. Rating	23.00	22.50	19.60	19.61	60	25.60	25.60	22.50	19.61	22.50	22.50	23.00
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Pairs	Pairs	Pairs	Block	Block	Block	Block	Block
Bore, Stroke	3¾x5	3¾x5⅛	3⅛x5	3⅛x5½	6x6	4x5	4x5	3¾x5⅛	3½x5	3¾x5	4¾x5⅛	3½x5
Valve Location	Left	Left	Right	Right	.....	Right	Right	Left	Right	Right	Left	Right
No. Main Bear.	Three	Three	Three	Three	.....	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1200	1300	1100	1200	1600	1160	1160	1308	.....	1150	1000	.....
Lubrication	Cir. spl.	Spl. pres.	Spl. cir.	Spl pres.	Pressure	Spl. pres.	Cir. Spl., Grav.	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.
Cool. System	Centrifugal	Water pump	Ther. syp.	Thermo	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Thermo	Thermo	Centrifugal	Thermo
Radiator Type	Fin. cast	Cell. cast.	Cell. sh.	Sq.-t. sheet	Fin. sheet	Cellular	Cellular	Fin. sheet	Fin. cast.	Cell sh.	Sq.-t. sheet	Cell. cast
Carburetor	Schebler	Zenith	Schebler	Schebler	Stewart	Optional	Optional	Stromberg	Zenith	Optional	Rayfield	Stromberg
Ignition, Make	Bosch	Eisemann	Eisemann	Eisemann	.....	Splitdorf	Splitdorf	Bosch	Bosch	Optional	Bosch	Eisemann
Type, Control	Single, hand	Fixed	Dual, hand	Dual, hand	Dual, hand	Single, hand	Single, hand	Single, hand	Single, fixed	Single, hand	Single	Single, hand
Governor Drive	Motor	Motor	.....	.....	Motor	Motor	Camshaft	D. shaft	.....	.....	Motor	Motor
Speed, M. P. H.	18	18	18.5	18.7	Six	17¾	19.75	16	.....	18	16	25
Clutch Type	Dry disc	Cone	Dry disc	Wet disc	Wet disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry plate
Trans. Gearset	Selective	Selective	Selective	Selective	.....	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit M, 3	Amid., three	Unit M, three	Amid., three	....., 3	Unit M, three	Unit M, three	Unit M, 3	Unit M, three	Unit M, three	Unit M, three	Unit M, 3
Driven by	Top worm	Top worm	Top worm	Double chain	Top worm	Top worm	Double chain	Top worm	Top worm	Top worm	Top worm	Top worm
Ratio Gear Red.	6.50-1	6.75-1	6.00-1	6.88-1	.....	7.00-1	6.29-1	5.16-1	7.75-1	6.00-1	6.75-1	6.00-1
Tor. Taken by	Springs	Springs	Springs	.....	.....	Springs	Torque tube	Springs	Springs	Springs	.....	Springs
Propelled by	Springs	Springs	Springs	Radius rod	.....	Springs	Radius rod	Radius rod	Springs	Springs	.....	Springs
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptfc	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	130	145	138	110	.....	132, 144	144, 132	130, 144	132	136	Optional	124
Tire Type	Solid	Solid	Pneu., solid	Solid	Steel	Solid	Solid	Solid	Solid	Solid	Solid	Pneumatic
Tire Sizes	34x3½, 34x5	36x3, 36x5	34x4½, 34x3½	37x3½, 37x4	.....	36x4, 36x3½d	36x4, 36x3½d	36x3½, 36x5	36x3, 36x4	34x3½, 34x4	36x3, 36x4	35x5
Driver's Seat	Left	Left	Right	Right	Left	Left	Left	Left	Right	Left	Right	Left
Control Levers	Centre	Centre	Centre	Centre	.....	Centre	Centre	Centre	Centre	Centre	Centre	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 19 17 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 2000 POUNDS.

Make	Palmer	Palmer Moore	Paulding	Republic	Rowe	Royal	Selden	Service	Signal	Stewart B	Stewart C	Studebaker
Model	M	M	G G 1	10	C W	B 1	TX	120	F	S	A	7
Capacity	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Chassis Price.	$1485	$1350	$1300	$1095c	$2450	.....	$1385	$1375	$1700	$1290	$700	$1100
S. A. E. Rating	22.50	22.50	25.60	19.61	16.92	16.92	19.60	19.61	22.50	19.60	20.00	24.22
Engine Cyls.	Four	Four	Four	Four	Four	Four	.....	Four	Four	Four	Two	Four
How Cast	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Single	Block
Bore, Stroke.	3¾x5	3¾x5½	4x5	3½x5	3¼x5	3¾x5	3½x5	3½x5½	3¾x5¼	3½x5½	5x5½	3⅞x5
Valve Location	Right	R. & H.	Right	Right	Left	Left	Left	Right	Left	Right	.....	Left
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Two	Three
Max. R. P. M.	1150	1000	Spl. pres.	.....	1200	1600	1300	2300	1200	2100	.....	960
Lubrication	Cir. spl.	Cir. spl.	Thermo	Water thermo	Centrifugal	Water thermo	Cir. spl.	Spl. pres.	Spl. pres.	Cir. spl.	Pressure	Cir. spl.
Cool. System.	Thermo	Thermo	Z-Z-t. sheet	Cell. cast.	Sq.-t. sheet	Cellular	Thermo	Thermo	Centrifugal	Thermo	Centrifugal	Centrifugal
Radiator Type	Cell. cast.	Fin. cast.	Kingston	Stromberg	.....	Stromberg	Vertical tube	Fin. sheet	Fin. cast.	Tubular	Cell. sheet	Tubular
Carburetor	Stromberg	Zenith	Kingston	Bosch	Bosch	Bosch	Schebler	Stromberg	Stromberg	Zenith	Schebler	Schebler
Ignition, Make	Bosch	Bosch	Bosch	Single, fixed	Single, hand	Single, fixed	Bosch	Bosch	Eisemann	Dixie	Kingston	Battery
Type, Control.	Single, fixed	Single, auto.	Dual, hand	.....	Motor	Motor	Single, fixed	Single, hand	Single, fixed	Fixed	Dual, hand	Single, hand
Governor Drive	.....	Duplex	.....	.....	.....	.....	.....	.....	Motor	.....	.....	F. wheel
Speed, M. P. H.	18	18	18	15	.....	18	.....	18	15	25	18	20
Clutch Type.	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry plate	Dry plate	Cone
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Ind. clutch	Selective	Selective	Selective	Selective	Planetary	Selective
Located, Speeds	Unit M, three	Amid., three	Unit M, three	Unit M, three	Unit M, four	Amid., three	Unit M, three	Unit M, three	Unit M, three	Unit M, three	Unit M, two	Unit X, three
Driven by.	Int. gear	Int. gear	Int. gear	Int. gear	Top worm	Top worm	Internal gear	Top worm	Top worm	Int. gear	Double chain	Bevel
Ratio Gear Red.	.....	6.83-1	6.00-1	7.00-1	.....	.....	8.20-1	7.00-1	7.75-1	7.00-1	7.00-1	5.00-1
Tor. Taken by	Springs	Torsion arm	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	.....	Torsion arm
Propelled by.	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Radius rod	Springs	Radius rod	Radius rod
Springs, For.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear.	½ elliptic	Platform	Platform	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	132	126	120	124	130	128	131, 140	137	144	118	96	125
Tire Type.	P. & S.	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Pneumatic
Tire Sizes.	35x4½, 35x4½	36x3½, 36x4	36x3½ 36x4	34x3, 34x4	34x3½, 34x4	34x4, 34x5	34x3, 34x4	34x3, 34x4	34x3, 36x4	34x3½, 34x4	36x3, 36x3	35x5, 35x5
Driver's Seat.	Left	Left	Left	Left	Left	Right	Right	Left	Left	Left	Left	Left
Control Levers	Centre	.....	Centre	Centre	Centre	Right	Centre	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 2000 AND 2500 POUNDS.

Make	Superior	Tiffin	Wichita	Wichita	Wilcox	Wisconsin	Zeitler & Lam.	Bethlehem	Denmo	Hawkeye	Packard	Sanford
Model	A	A W	A	K	S	A	1 S B	A-1	10	H	1 E	R
Capacity	2000	2000	2000	2000	2000	2000	2000	2500	2500	2500	2500	2500
Chassis Price.	$1350	$1450	$1350	$1650	.....	$1650	$1550	$1125	$1385	$1300	$2300	$1350
S. A. E. Rating	19.61	19.61	16.92	19.61	22.50	19.60	22.50	22.50	22.50	22.50	25.60	19.61
Engine Cyls.	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block
Bore, Stroke.	3½x5	3¼x5	3¼x5	3½x5	3¾x5	3½x5½	3¾x5	3¾x4¼	3¾x5	3¾x5	4x5½	3½x5½
Valve Location	Head	Right	Left	Left	Left	.....	Left	Left	Left	Left	Right	Right
No. Main Bear.	Three	Three	Two	Two	Three	.....	Three	Three	Three	Three	Four	Three
Max. R. P. M.	1200	1000	1080	1085	1500	.....	12.50	1100	.....	1700	1000	1500
Lubrication	Cir. spl.	Spl. pres.	Spl. pres.	Spl. pres.	Cir. spl.	.....	Spl. pres.	Spl., pres.	Force F.	.....	Pressure	Spl. pres.
Cool. System.	Thermo	Thermo	Thermo	Thermo	Thermo	Centrifugal	Centrifugal	Water thermo	Thermo	Gear	Centrifugal	Thermo
Radiator Type	Cell. sheet	F. sheet	Cell. sheet	Cell. sheet	Cellular	Cell. sheet	Cell. cast.	Cellular	Cell. sheet	Fin. cast.	Cell. sheet	Fin.-t. cast.
Carburetor	Stromberg	Schebler	Stromberg	Stromberg	Optional	.....	Stromberg	Schebler	Stewart	Master	Packard	Schebler
Ignition, Make	Eisemann	Bosch	Bosch	Bosch	Bosch	.....	Bosch, At. Kt.	Bosch	Dixie	Eisemann	Dixie	Splitdorf
Type, Control.	Single, fixed	Single, hand	Single, hand	Single, hand	Single, hand	.....	Foot, hand	Hand	Single	Single, hand	Dual, hand	Single, fixed
Governor Drive	Automatic	Motor	.....	.....	Motor	Motor	Duplex	.....	Shaft	.....	Motor	.....
Speed, M. P. H.	17	15	18	18	18	.....	16	18	20	.....	16	16
Clutch Type.	Dry disc	Multiple disc	Cone	Cone	Dry disc	Cone	Dry plate	Dry disc	Dry disc	Dry plate	Dry disc	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	.....	Ind. clutch	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit M, three	Unit M, three	Unit J, three	Amid., three	Unit M, three	Centre	Unit M, three	Unit, M	Unit M, three	Unit M, three	Amid., four	Unit M, three
Driven by.	Int. gear.	Worm	Double chain	Top worm	Top worm	Top worm	Worm	Internal gear	Internal gear	Internal gear	Top worm	Int. gear
Ratio Gear Red.	7.00-1	8.00-1	7.32-1	7.80-1	6.50-1	.....	6.67-1	7.40-1	7.00-1	.....	6.25-1	6.83-1
Tor. Taken by	Springs	Springs	.....	Springs	Springs	.....	Springs	Springs	Springs	Springs	Torsion arm	Springs
Propelled by.	Springs	Springs	Radius rod	Springs	Springs	.....	Top worm	Springs	Springs	.....	Radius rod	Springs
Springs, For.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic
Springs, Rear.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic
Wheelbase	134	112	110	118	128	154	140	126	124	136	126 or 144	138
Tire Type.	Optional	Solid	Solid	Solid	Pneumatic	Solid	Solid	Solid	Pneu., solid	Solid	Solid	Pneumatic
Tire Sizes.	34x3½, 34x4	34x3, 34x4	34x3, 34x4	36x3, 36x4	35x5, 35x5	34x3½, 34x4	36x3½, 36x4	33x4, 34x4	34x4½, 34x4	34x3½, 34x5	34x3½, 34x6	34x4½, 36x4
Driver's Seat.	Left	Left	Right	Right	Left	Left	Left	Left	Left	Left	Left	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Left	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 2500 AND 3000 POUNDS.

Make	Selden	Atterbury	Barker	Brockway	Chase	Continental (C)	Corbitt	Croce	D-E	Denby	Diamond T	Federal
Model	F	6 R	U	J 2	C	C B 1½	D	18	3000	18	J 4	M
Capacity	2500	3000	3000	3000	3000	3000	3000	3000	2500	3000	3000	3000
Chassis Price	$1700	$2075	$1600	$1875	$2125	$1750	$2150	$1900	$1500	$1775	$2000	$1800
S. A. E. Rating	19.61	22.5	25.6	22.50	19.61	22.50	22.50	25.60	22.50	22.50	22.50	27.20
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Pairs	Block	Block	Block	Block	Block	Block
Bore, Stroke	3½x5	3¾x5¼	4x5	3¾x5	3½x5¼	3¾x5¼	3¾x5¼	4x5	3¾x5	3¾x5	3¾x5	4⅛x5¼
Valve Location	Right	Left	Left	Left	Right	Left	Left	Right	Left	Right	Left	Left
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1130	1200	1500	1300	1200	.....	1500	1000	1250	1275	.....	1190
Lubrication	Cir. spl.	Cir. spl.	Spl. pres.	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.	Spl. pres.	Cir. spl.	Cir. spl.	Cir. spl.
Cool. System	Thermo	Centrifugal	Thermo	Thermo	Thermo	Centrifugal	Centrifugal	Centrifugal	Thermo	Thermo	Thermo	Centrifugal
Radiator Type	Sq.-t. sheet	Fin. cast	Cell. sheet	Fin. cast	Fin. sheet	Fin. cast.	Fin-T-cast	Sq.-t. cast.	Fin-t-cast	Cell. cast.	Cellular	Cell. cast
Carburetor	Stromberg	Zenith	Stromberg	Schebler	Stromberg	Stromberg	Stromberg B	Rayfield	Zenith	Stromberg	Rayfield	Stromberg
Ignition, Make	Optional	.....	Eisemann	Bosch	Bosch	Eisemann	Eisemann	Bosch	Dixie 44	Eisemann	Bosch	Eisemann
Type, Control	Single, fixed	Single, fixed	Single, auto	Single, fixed	Single, fixed	Single, fixed	Hand	Single, hand	Hand	Single, fixed	Single, fixed	Single, fixed
Governor Drive	Motor	Motor	.....	Motor	Motor	Motor	Motor	.....	Gearset	Motor	.....	Motor
Speed, M. P. H.	17	15	27	15	16	.....	14	15	15	14	16	15
Clutch Type	Dry disc	Dry disc	Dry plate	Cone	Dry disc	Dry disc	Dry disc	Cone	Dry plate	Dry plate	Dry disc	Cone
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit M, three	Unit M, 4	Unit M, 4	Amid., three	Unit M, three	Unit M, three	Unit M, three	Amid., three	Unit, three	Unit M, three	Unit M, three	Amid., three
Driven by	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm	Internal gear	Top worm	Top worm
Ratio Gear Red.	6.75-1	8.50-1	.....	8.67-1	8.66-1	9.25-1	8.67-1	.....	8,66-1	9.80-1	7.75-1	8.50-1
Tor. Taken by	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs
Propelled by	Springs	Springs	Springs	Radius rod	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Radius rod
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	126½	140½	130	124, 140	149½	144	138	120	144	144	127, 160	144
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	34x3, 34x4	36x3½, 36x5	36x3½, 36x5	36x3½, 36x5	36x3½, 36x6	34x3½, 36x5	36x3½, 36x5	36x4, 36x4	34x4, 34x5	36x3½, 36x6	36x3½, 36x5	36x3½, 36x5
Driver's Seat	Right	Right	Left	Left	Right	Left	Left	Right	Left	Left	Left	Left
Control Levers	Centre	Right	Centre	Centre	Centre	Centre	Centre	Right	Centre	Centre	Centre	Centre

LOAD CAPACITY, 3000 POUNDS.

Make	Fulton	Gabriel	Garford	Gary	G. M. C.	G. M. C.	Gramm-Bern.	Hewitt-Ludlow	Hewitt-Ludlow	Horner	Hurlburt	Jeffery
Model	F 1	D	66	G	30	31	.....	.....	.....	.....	1½ Ton	2016
Capacity	3000	3000	3000	2000	3000	3000	3000	3000	3000	3000	3000	3000
Chassis Price	$1090	$2000	$2100	.....	$1900	$2100	$2150	$2250	$2150	$2350	$2250	$1465
S. A. E. Rating	27	30.00	22.50	28.90	22.5	22.50	22.40	23.00	23.00	27.20	22.50	22.5
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Block	Block	.....	.....	Block	Block	Block
Bore, Stroke	3¾x4¼	4¼x5½	3¾x5½	4¼x5½	3¾x5	3¾x5	3¾x5¼	3¾x5½	3¾x5½	4⅛x5¼	3¾x5½	3¾x5¼
Valve Location	Head	Left	Right	Right	Right	Right	Right	.....	.....	Left	Right	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	.....	.....	Three	Three	Three
Max. R. P. M.	1400	1200	1000	1300	1300	1300	1100	.....	.....	1200	1200	1100
Lubrication	Spl., pres.	Cir. splash	Cir. spl.	Spl., pres.	Spl. pres.	Cir. spl.	Cir. spl.	.....	.....	Spl. pres.	Spl., pres.	Spl. pres.
Cool. System	Thermo Syp.	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Thermo	.....	.....	Centrifugal	Pump	Centrifugal
Radiator Type	Cellular	Cell. sheet	Cell. sheet	Cellular	Fin.-t. cast.	Fin.-t. cast.	Fin.-t. cast.	.....	.....	Fin. cast.	Cellular	Cellular
Carburetor	.....	Rayfield	Rayfield	Stromberg	Marvel	Marvel	Zenith	Stromberg	Stromberg	Master	Fletcher	Stromberg
Ignition, Make	Splitdorf	Bosch	Dixie	Eisemann	Eisemann	Eisemann	Eisemann	Remy	Remy	Bosch	Eisemann	Dixie
Type, Control	Automatic	Single, hand	Single, hand	Fixed	Single, hand	Single, hand	Single, hand	.....	.....	Duplex, hand	Automatic	Hand
Governor Drive	.....	.....	Motor	.....	Motor	Motor	Motor	.....	.....	Motor	Motor	Duplex
Speed, M. P. H.	.....	21	13	15	15	15	15.2	.....	.....	16½	18	16
Clutch Type	Mult. disc	Cone	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Cone	Cone	Dry disc	Dry disc	Dry plate
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Ind. C.	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Centre, three	Amid., four	Amid, three	Unit M, three	Unit M, 4	Unit M, four	Amid., three	....., three	....., three	Amid., three	Unit M, three	Unit M, three
Driven by	Internal gear	Top worm	Top worm	Top worm	Double chain	Top worm	Top worm	.....	.....	Top worm	Worm	Int. gears
Ratio Gear Red.	7.50-1	6.00-1	7.75-1	7.75-1	9.06-1	9.25-1	7.75-1	.....	.....	7.90-1	6.25-1	8.00-1
Tor. Taken by	Springs	Springs	Springs	Springs	Springs	Springs	Springs	.....	.....	Springs	Springs	Springs
Propelled by	Springs	Springs	Springs	Springs	Radius rods	Radius rod	Springs	.....	.....	Radius rod	Springs	Springs
Springs, For	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	.....	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	.....	Platform	½ elliptic	½ elliptic
Wheelbase	136	136, 144	142	144	144	144	130	126	126	145	136	130
Tire Type	Solid	Spl. pres.	Solid	.....	Solid	Solid	Solid	.....	.....	Solid	Solid	P. & S.
Tire Sizes	34x3½, 34x2½d	36x5	36x3½, 36x5	36x3½, 36x5	36x3½, 36x5	36x3½, 36x5	34x3½, 36x5	36x3½, 36x6	36x3½, 36x6	36x4, 36x5	34x4, 34x5	34x4½, 34x5
Driver's Seat	.....	Left	Right	Left	Left	Left	Left	Left	Left	Left	Left	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 3000 POUNDS.

Make	Kelly Spring.	Kelly Spring.	Kleiber	Krebs	Lambert	Larrabee	Lip. Stewart	Little Giant	Maccar	Mack	Mack	Manly
Model	K 32	K 31	A	40	V 3	N	F	H	L	A B	\ B	30
Capacity	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Chassis Price	$2250	$2250	$2250	$2050	$1500	$2000	$2300	$1500	$2100	$2500	$2500	$1800
S. A. E. Rating	22.50	22.50	27.20	27.23	32.40	27.20	27.50	19.61	27.20	25.60	25.60	22.50
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Block	Block	Block	Block	Pairs	Pairs	Block
Bore, Stroke	3¾x5¼	3¾x5¼	4⅛x5¼	4⅛x5¼	4⅛x4½	4⅛x5¼	4⅛x5¼	3½x5½	4⅛x5¼	4x5	4x5	3¾x5¼
Valve Location	Left	Left	Left	Left	Left	Left	Left	Right	Left	Right	Right	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1250	1250	1250	1110	1500	1200	1080	1200	1000	1160	1160	1100
Lubrication	Pressure	Pressure	Spl. pres.	Cir. Spl.	Cir. spl.	Cir. spl.	Spl. pres.	Spl. cir.	Spl. pres.	Cir. Spl., Grav.	Spl. pres.	Circulating
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Water pump	Thermo	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Cell. cast	Cell. sheet	Cellular	Tube cast	Fin. sheet	Fin. cast.	Cell. cast.	Cell. sh.	Fin. cast.	Cellular	Cell. sheet	Tube cast
Carburetor	Rayfield	Rayfield	Schebler	Zenith	Schebler	Schebler	Zenith	Schebler	Stromberg	Optional	Optional	Zenith
Ignition, Make	Eisemann	Eisemann	Bosch	Bosch	High tension	Bosch	Eisemann	Eisemann	Bosch	Splitdorf	Splitdorf	Bosch
Type, Control	Single, fixed	Single, fixed	Hand	Hand	Dual, hand	Single, hand	Fixed	Dual, hand	Single, hand	Single, hand	Single, hand	Fixed
Governor Drive	Motor	Motor	Motor	Engine	.....	Motor	Motor	.....	Helical gear	Camshaft	Motor	.....
Speed, M. P. H.	15½	15.7	18	15	15	15	18	18.7	16	17.75	17.75	16
Clutch Type	Cone	Cone	Wet disc	Disc	.....	Dry disc	Cone	Wet disc	Dry disc	Dry disc	Dry disc	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Friction	Selective	Selective	Selective	Selective	Selective	Selective	Ind. clutch
Located, Speeds	Unit J, 3	Unit J, three	Amid., three	Unit M, four	.....	Unit M, three	Amid., three	Unit J	Amid., three	Unit M, three	Unit M, three	Unit, three
Driven by	Worm	Double chain	Top worm	Top worm	Double chain	Top worm	Top worm	Double chain	Top worm	Top worm	Double chain	Worm
Ratio Gear Red.	8.50-1	8.60-1	7.75-1	7.75-1	.....	7.75-1	7.75-1	6.88-1	6.75-1	7.75-1	6.99-1	7.50-1
Tor. Taken by	Springs	Springs	Springs	Springs	.....	Springs	Springs	.....	Springs	Springs	Torque tube	Torsion rods
Propelled by	Radius rod	Radius rod	Springs	Springs	Radius rod	Springs	Springs	Radius rod	Radius rod	Springs	Radius rod	Radius rods
Springs, Fr.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	⅛ elliptic	⅛ elliptic	½ elliptic	½ elliptic	⅛ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	¼ elliptic	146	¾ elliptic	⅛ elliptic	½ elliptic	½ elliptic	⅛ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	144	144	140	Solid	120	140	145, 158	110	150	162, 144	144, 162	156, 168
Tire Type	Solid	Solid	Solid	36x3½, 36x5	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x3½, 36x6	36x3½, 36x6	36x3½, 36x6	Right	36x3, 36x3½	36x3½, 36x5	36x3½, 36x3d	37x3½, 37x4	36x4, 36x5	36x4, 36x3½d	36x4, 36x3½d	36x4, 36x5
Driver's Seat	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Lett	Left
Control Levers	Centre	Centre	Centre		Right	Centre	Centre	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 3000 POUNDS.

Make	Menominee	Modern	Mogul	Moon	Moreland	Neteo	New York	Old Reliable	Packard	Palmer	Paulding	Republic
Model	H	N	L M	B	.....	C	M	.....	1½ E	.....	E E 1	11
Capacity	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Chassis Price	$1775	.....	$1600	$1650	$2100	$2250	$2200	$1950	$2500	$1800	$1600	$1275
S. A. E. Rating	22.50	22.50	22.50	22.50	27.20	27.20	27.20	22.50	25.60	27.20	28	22.50
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block
Bore, Stroke	3¾x5¼	3¾x5	3¾x5¼	3¾x5¼	4⅛x5¼	4⅛x5¼	4⅛x5¼	3¾x5	4x5½	4⅛x5¼	4x6	3¾x5
Valve Location	Left	Right	Left	.....	Left	Left	Left	Left	Right	Left	Right	Left
No. Main Bear.	Three	Three	.....	Three	Three	Three	Three	Three	Four	Three	Four	Three
Max. R. P. M.	800	.....	1200	1000	1120	1200	1200	.....	1000	.....	1000	.....
Lubrication	Cir. splash	Spl. pres.	Spl. pres.	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.	Spl. pres.	Pressure	Cir. spl.	Spl. pres.	Spl. pres.
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Thermo	Water thermo
Radiator Type	Cell. sheet	Fin. cast.	Cell. cast.	Sq.-t. sheet	Cell. sh.	Fin. cast.	Cell. cast	Fin. cast.	Cellular	Cell. cast	Z-Z-t. sheet	Cell. cast
Carburetor	Stromberg	Zenith	Carter	Stromberg	Optional	Zenith	Stromberg	Stromberg	Packard	Stromberg	Kingston	Stromberg
Ignition, Make	Bosch	Bosch	Bosch	Bosch	Optional	Eisemann	Bosch	Bosch	Dixie	Bosch	Kingston	Bosch
Type Control	Single, hand	Single, fixed	Single, fixed	Dual, hand	Single, hand	Single, fixed D. shaft	Single, fixed	Single, hand	Hand	Single, fixed	Dual, hand	Single, fixed
Governor Drive	Drive shaft	.....	Motor	.....	.....	.....	Motor	.....	Motor	Motor	.....	.....
Speed, M. P. H.	15	.....	15	18	15	15	18	16	16	15	15	15
Clutch Type	Dry disc	Dry disc	Dry plate	Cone	Dry plate	Dry plate	Disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit M, three	Unit M, three	Unit M, three	.....	Unit M, three	Unit M, three	Unit, 3	Unit M, three	Amid., four	Unit M, 3	Unit M, three	Unit M, three
Driven by	Worm	Top worm	Top worm	Gear	Top worm	Top worm	Top worm	Top worm	Top worm	Int. gear	Int. gear	Int. gear
Ratio Gear Red.	9.75-1	7.75-1	7.75-1	5.62-1	6.75-1	7.50-1	7.75-1	7.75-1	6.25-1	.....	7.00-1	8.00-1
Tor. Taken by	Springs	Springs	Torsion tube	Radius rod	Springs	Springs	Springs	Springs	Torsion arm	Springs	Springs	Springs
Propelled by	Radius rod	Radius rod	Radius rod	Radius rod	Radius rod	Springs	Radius rod	Springs	Radius rod	Springs	Springs	Springs
Springs, Fr.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	130	144	125	140	126	144	144	138	126 or 144	132	130	144
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x3½, 36x5	36x3½, 36x5	36x4, 36x5	36x3½, 36x6	34x3½, 34x5	36x3½, 36x5	36x3½, 36x5	34x3½, 36x6	34x3½, 34x3½d	37x3½, 37x5	36x4, 36x5	34x3, 34x5
Driver's Seat	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Left	Left
Control Levers	Centre	.....	Centre	Centre	Centre	Centre	Centre	Centre	Left	Centre	Centre	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 3000 POUNDS.

Make	Sandow	G. A. Schacht	Service	Signal	Stegeman	Stewart B	Sullivan	Tiffin	Universal	Velie	White	Wichita
Model	.....	1½ Ton	130	H	.....	4	G	G W	G	25	T B C	L
Capacity	3000	2000	3000	3000	4000	3000	3000	3000	3000	3000	3000	3000
Chassis Price	$1800	$2650	$1950	$2000	$2250	$1485	$1600	$1790	$1950	$2250	$3000	$1800
S. A. E. Rating	22.50	29	27.23	27.20	29.40	19.60	22.50	22.50	22.50	27.20	22.50	19.61
Engine Cyls	Four	Four	Four	Four	Six	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block
Bore, Stroke	3¾x5¼	4¼x5½	4½x5½	4⅛x5¼	3½x5¼	3½x5½	3¾x4½	3¾x5¼	3¾x5¼	4⅛x5¼	3¾x5½	3½x5
Valve Location	Left	Right, head	Right	Left	Left	Right	R. H.	Left	Right	Left	Right	Left
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Two	Two
Max. R. P. M.	1000	1000	1700	1295	1100	2100	1350	1000	1160	1000	.....	1200
Lubrication	Cir. spl.	Spl., pres.	Spl pres.	Spl. pres.	Spl. pres.	Cir. spl.	Spl. pres.	Spl. pres.	Cir. spl.	Spl. pres.	Spl. pres.	Spl. pres.
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Thermo	Thermo	Centrifugal	Gear pump	Centrifugal	Centrifugal	Thermo
Radiator Type	Cell. sheet	Cell. cast	Fin.-t. cast	Fin. cast.	Sq.-t. cast	Tubular	Fin. sheet	Fin. sheet	Fin. cast.	Fin. cast.	Cell. sheet	Cell. sheet
Carburetor	Stromberg	Schebler	Stromberg	Stromberg	Rayfield	Zenith	Holley	Schebler	Optional	Stromberg	White	Stromberg
Ignition, Make	Bosch	Bosch	Eisemann	Eisemann	Westinghouse	Dixie	Bosch	Bosch	Eisemann	Bosch	Eisemann	Bosch
Type, Control	Single, hand	Single, hand	Single, hand	Single, fixed	Single, auto.	Single, fixed	Single, fixed	Single, hand	Single, hand	Single, hand	Single hand	Single, hand
Governor Drive	Motor	Motor	.....	Motor	Motor	.....	.....	Motor	Motor	Motor	.....	.....
Speed, M. P. H.	20	16	15	15	18	25	18	13½	15	18	.....	15
Clutch Type	Dry disc	Cone	Dry plate	Dry disc	Dry disc	Dry plate	Cone	Multiple disc	Dry plate	Dry disc	Wet plate	Cone
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit M, three	Amid., three	Amid., three	Unit M, three	Unit M, three	Unit M, three	Unit J, three	Unit M, three	Unit M, three	Amid., four	Amid., four	Amid, three
Driven by	Top worm	Worm	Top worm	Top worm	Top worm	Int. gear	Double chain	Worm	Top worm	Top worm	Double red.	Top worm
Ratio Gear Red.	7.75-1	7.75-1	7.75-1	9.25-1	9.67-1	7.00-1	8.50-1	8.00-1	7.83-1	6.80-1	.....	8.66-1
Tor. Taken by	Springs	Torque arm	Springs	Springs	Springs	Springs	Sptings	Springs	Torsion arm	Springs	Springs	Springs
Propelled by	Springs	Radius rod	Springs	Radius rod	Radius rod	Springs	Radius rod	Springs	Radius rod	Springs	Radius rod	Springs
Springs, For	½ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	½ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	½ elliptic	⅛ elliptic	⅛ elliptic
Springs, Rear	½ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	½ elliptic	Platform	⅛ elliptic	⅛ elliptic	½ elliptic	⅛ elliptic	½ elliptic
Wheelbase	150	138	150	144	150	140	129	138	130	150	145½	118
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Pneumatic	Solid
Tire Sizes	36x3, 36x4	38x3½, 38x5	36x3½, 36x5	34x3½, 36x5	34x4, 36x3½d	34x3½, 34x5	36x3, 36x4	36x3½, 36x5	34x3½, 34x5	36x4, 36x7	36x4½, 36x4½d	36x3, 36x5
Driver's Seat	Right	Left	Left	Left	Left	Left	Left	Left	Left	Right	Left	Right
Control Levers	Centre	Centre	Centre	Centre	C. & L.	Centre	Centre	Centre	Centre	Right	C. & L.	Centre

LOAD CAPACITY, 3000 AND 4000 POUNDS.

Make	Wilcox	Z & L	Acason	Acme	Armleder	Atterbury	Autocar	Available	Avery	Bessemer	Blair	Bourne
Model	R	.....	2	A	H W	6-C	21 F	B	B	D	2 C	V-M
Capacity	3000	3000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Chassis Price	.....	$1950	.....	$2200	$2800	$2575	$1650	$2250	$2700	$2200	$2850	$3150
S. A. E. Rating	29.00	25.60	28.9	27.20	27.20	27.20	18.10	27.20	36.15	27.20	28.90	25.6
Engine Cyls	Four	Four	Four	Four	Four	Four	Two	Four	Four	Four	Four	Four
How Cast	Pairs	Block	Pairs	Block	Block	Block	Single	Block	Single	Block	Pairs	Block
Bore, Stroke	4¼x5	4x5	4¼x5¾	4⅛x5¼	4½x5¼	4⅛x5¼	4¾x4½	4½x5¼	4¾x5	4½x5¼	4¼x5¾	4x5½
Valve Location	Right	Left	Left	Left	Left	Left	Right	Left	Left	Left	Left	Left
No. Main Bear.	Three	Three	Three	Three	Three	Three	Two	Three	.....	Three	Three	Five
Max. R. P. M.	1200	1200	1200	1200	1600	1200	1800	1200	1200	1085	1100	1100
Lubrication	Cir. spl.	Spl., pres.	Splash	Spl. pres.	Cir. spl.	Cir. spl.	Splash	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.	Force F.
Cool. System	Centrifugal	Centrifugal	Pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Water pump	Centrifugal	Water pump
Radiator Type	Cell. sh.	Cell. cast	Cell. cast	Fin. sheet	Cell. sheet	Fin. cast.	Fin. sheet	Cell. sheet	Fin. sheet	Cellular	Zig zag tube	Cell. cast.
Carburetor	Optional	Stromberg	Schebler	Rayfield	Schebler	Zenith	Stromberg	Stromberg	Rayfield	Rayfield	Optional	Zenith
Ignition, Make	Bosch	Bosch	Eisemann	Eisemann	Bosch	.....	Bosch	Bosch	Eisemann	Bosch	Optional	Eisemann
Type, Control	Single, hand	Dual, hand	Single, hand	Single, fixed	Single, hand	Single, fixed	Single, fixed	Single, fixed	Dual, auto.	Hand	Optional	Fixed
Governor Drive	Motor	Duplex	.....	Motor	.....	Motor	.....	Motor	Motor	Motor	Motor	Engine
Speed, M. P. H.	16	16	17	12	16	15	25	15	14½	15	15	15
Clutch Type	Cone	Dry plate	Disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Cone	Cone	.....
Trans. Gearset	Selective	Ind. clutch	Selective	Selective	Selective	Selective	Progressive	Selective	Selective	Selective	Ind. C.	.....
Located, Speeds	Amid., three	Unit M, three	Unit M, 4	Unit M, three	Unit M, three	Unit M, four	Amid., three	Unit M, three	Unit J, three	Amid., three	Amid., three	.....
Driven by	Top worm	Worm	Worm	Top worm	Top worm	Top worm	Double red.	Top worm	Double chain	Top worm	Top worm	Top worm
Ratio Gear Red.	7.70-1	7.75-1	7.00-1	8.50-1	8.50-1	8.50-1	7.10-1	7.75-1	3.50-1	7.75-1	7.67-1	7.75-1
Tor. Taken by	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	.....	Springs	Sub. F., rad. rod	Springs
Propelled by	Springs	Springs	Springs	Springs	Rad. rod	Springs	Springs	Springs	Rad. rod	Springs	Sub. F., rad. rod	Radius rods
Springs, For	½ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	½ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	½ elliptic	⅛ elliptic	½ elliptic
Springs, Rear	½ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	½ elliptic	Platform	⅛ elliptic	⅛ elliptic	½ elliptic	⅛ elliptic	½ elliptic
Wheelbase	134	150	150	148	148, 166	153½	97	144	128	146 or 160	121	143
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x4, 36x5	36x2½, 36x5	34x4, 36x6	36x4, 36x6	36x4, 36x7	36x4, 36x4d	34x4, 34x5	36x4, 36x7	36x4, 36x3½d	36x4, 36x4d	34x4, 34x3½d	36x4, 36x4d
Driver's Seat	Left	Left	Left	Left	Left	Right	Right	Left	Right	Left	Right	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Right	Right	Centre	Centre	Centre	Right	Left

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 4000 POUNDS.

Make	Brockway	Burford	Coleman	Columbia	Continental (C)	Corbitt	Dart	Dayton	De Kalb	Diamond T	Dorris	Duplex
Model	K 2	O 3	J	E	C C 2	C	C-C	U	E 2	J 3	I B. W	C
Capacity	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Chassis Price	$2250	$2250	$2400	$1850	$2100	$2400	$2470	$2650	$2100	$2325	$2185	$2800
S. A. E. Rating	27.20	22.50	25.60	27.00	27.20	27.50	28.90	29.00	27.20	27.20	30.65	27.20
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Pairs	Block	Block	Pairs	Block	Block	Pairs	Block
Bore, Stroke	4⅛x5¼	3¾x5½	4x5	4⅛x5½	4⅛x5¼	4⅛x5¼	4¼x5½	4¼x5	4⅛x5¼	4⅛x5¼	4⅜x5	4⅛x5½
Valve Location	Left	Right	Left	Left	Left	Left	Right	Opposite	Left	Left	Head	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1300	1200	1000	2000	.....	1500	1500	1000	1500	.....	1460	1500
Lubrication	Cir. spl.	Spl. pres.	Pressure	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.	Cir. spl.	Spl. pres.	Cir. spl.	Cir. splash	Cir. spl.
Cool. System	Centrifugal	Centrifugal	Centrifugal	Water pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Cell. cast.	Centrifugal	Centrifugal
Radiator Type	Fin. cast.	Fin. cast.	Fin. sheet	Fin.-t. cast.	Cell. cast.	Fin.-t. cast.	Cellular	Fin. cast.	Fin. sheet	Sq.-t. sheet	Cellular	Fin. sheet
Carburetor	Schebler	Zenith	Schebler	Shakespeare	Stromberg	Stromberg	Stromberg	Stromberg	Master	Rayfield	Stromberg	Schebler
Ignition, Make	Bosch	Eisemann	Bosch	Eisemann	Eisemann	Eisemann	Eisemann	Bosch	Eisemann	Bosch	Bosch	Bosch
Type, Control	Single, fixed	Single, fixed	Single, hand	Hand	Single, fixed	Single hand	Single, fixed	Dual, hand	Single, hand	Single, fixed	Single, hand	Single
Governor Drive	Motor	.....	Motor	Engine	Motor	Motor	Motor	Duplex	Motor	Motor	Motor	Duplex
Speed, M. P. H.	15	15	15	15	.....	14	14	13⅓	14	15	15	20
Clutch Type	Cone	Cone	Dry plate	Cone	Dry disc	Dry disc	Wet disc	Wet disc	Cone	Dry disc	Dry disc	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Amid., 3	Unit M, three	Unit M, three	Amid.	Unit M, three	Unit M, three	Unit M, three	Unit J, three	Amid., three	Unit M, three	Unit M, three	Unit M four
Driven by	Top worm	Int. gear.	Top worm	Internal gear	Top worm	Top worm	Top worm	Double chain	Worm	Top worm	Top worm	Int. gear, four
Ratio Gear Red.	8.67-1	8.50-1	.....	9.60-1	9.25-1	8.67-1	9.25-1	9.16-1	7.75-1	7.75-1	7.75-1	8.00-1
Tor. Taken by	Springs	Springs	Springs	Springs	Springs	Springs	Springs	.....	Springs	Springs	Springs	Torsion arm
Propelled by	Radius rod	Springs	Springs	Springs	Springs	Springs	Springs	Radius rod	Springs	Springs	Springs	Radius rod
Springs, For.	½ elliptic	½ elliptic	Elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	⅛ elliptic	⅛ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	⅛ elliptic	½ elliptic	⅛ elliptic	½ elliptic	½ elliptic	Platform	⅛ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	140, 156	144	132	134, 144	146, 150, 180	148	150	118½	134	154, 160	144, 162	130
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x4, 36x7	36x3½, 36x3½d	36x4, 36x3½d	36x4, 36x6	34x4, 36x4d	36x4, 36x3½d	36x4, 36x4d	36x4, 36x3½d	26x4, 36x5	36x4, 36x6	36x4, 36x4d	36x4, 36x4
Driver's Seat	Left	Right	Right	Left	Left	Left	Left	Left	Left	Right	Left	Left
Control Levers	Centre	Centre	Right	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 4000 POUNDS.

Make	Duplex	Fargo	Federal	Forschler	Gabriel	Garford	Gary	G. M. C.	G. M. C.	Gramm-Bern.	Hall	Hahn
Model	E	O	O. and P.	B O	E	70 B	H	40	41	.....	.....	E
Capacity	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Chassis Price	.....	$1390	$2100	$2250	$2400	$2600	.....	$2375	$2550	$2450	$2000	$2200
S. A. E. Rating	29.00	22.50	27.20	27.20	30.00	29.00	28.90	27.22	27.22	22.40	30.00	32.40
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Pairs	Pairs
Bore, Stroke	4¼x5	3¾x5	4⅛x5¼	4⅛x5¼	4¼x5½	4¼x5½	4¼x5½	4⅛x5¼	4⅛x5¼	3¾x5¼	4⅛x5¼	4⅛x5½
Valve Location	Right	Right	Left	Left	Left	Right	Right	Right	Right	Right	Left	Left
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Five	Three
Max. R. P. M.	1240	1330	1030	1200	1200	1000	1300	1200	1200	1100	1200	980
Lubrication	Cir. spl.	Spl. pres.	Cir. spl.	Spl., pres.	Cir. spl.	Cir. spl.	Spl. pres.	Spl. pres.	Spl. pres.	Cir. spl.	Cir. spl.	.....
Cool. System	Centrifugal	Thermo	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Cellular	Centrifugal	Centrifugal	Thermo	Centrifugal	Centrifugal
Radiator Type	Fin. sheet	Fin. sheet	Cell. cast	Sq-t-sheet	Cell. sheet	Tubular	Centrifugal	Fin.-t. cast.	Fin.-t. cast.	Fin.-t. cast.	Fin. cast	Sq.-t. sheet
Carburetor	Schebler	Rayfield	Stromberg	Zenith	Rayfield	Rayfield	Stromberg	Marvel	Marvel	Zenith	Zenith	Stromberg
Ignition, Make	Bosch	Berling	Eisemann	Bosch	Bosch	Dixie	Eisemann	Eisemann	Eisemann	Eisemann	Eisemann	Bosch
Type, Control	Dual, hand	Single, hand	Single, fixed	Single, fixed	Single, hand	Single, hand	Fixed	Single, hand	Single, hand	Single, hand	.....	Dual, hand
Governor Drive	Duplex	.....	Motor	Motor	.....	Motor	.....	Motor	Motor	Motor	Motor	Motor
Speed, M. P. H.	12	15	13	14	16½	13	15	14	14	18	18	15
Clutch Type	Dry disc	Dry disc	Cone	Wet disc	Cone	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Ind. clutch	Progressive	Selective
Located, Speeds	Unit M, eight	Unit M, three	Amid., 3	Unit M, three	Amid., four	Amid., three	Unit M, three	Unit M, four	Unit M, four	Amid., 3	Unit M, 3	Unit M, three
Driven by	Int. gear, four	Int. gear	Top worm	Worm	Top worm	Top worm	Top worm	Double chain	Top worm	Top worm	Top worm	Worm
Ratio Gear Red.	8.00-1	9.50-1	8.50-1	8.75-1	7.75-1	7.75-1	8.75-1	9.06-1	9.25-1	8.60-1	.....	7.00-1
Tor. Taken by	Torsion arm	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Torque arm
Propelled by	Radius rod	Springs	Radius rod	Springs	Springs	Springs	Springs	Radius rod	Radius rod	Springs	Springs	Radius rod
Springs, For.	½ elliptic	⅛ elliptic	⅛ elliptic	.....	⅛ elliptic	½ elliptic	½ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	⅛ elliptic	.....
Springs, Rear	½ elliptic	⅛ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....
Wheelbase	130	132	O 144, P 168	140	144, 168	142	144	158	158	146	132 & optional	144
Tire Type	Solid	Solid	Solid	Solid	P. or S.	Solid	.....	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x6, 36x6	36x4, 36x6	36x4, 36x4	34x4, 34x6	36x5a, 36x4d	36x4, 36x4d	36x6	36x4, 36x4d	36x4, 36x4d	34x4, 34x3½d	36x4, 36x8	36x4, 36x4d
Driver's Seat	Left	Left	Left	Left	Left	Right	Left	Left	Left	Left	Left or right	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 4000 POUNDS.

Make	Hoadley	Horner	Hurlburt	Independent	Indiana	Jeffery	KisselKar	Kleiber	Knickerbocker	Krebs	Lambert	Landshaft
Model		F. G.	2 Ton	G	D	4016 Quad	.....	BB	16	60	V 5	J 1
Capacity	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Chassis Price	$3000	.....	$3000	$1850	.....	$2850	$1875	$2400	$2200	$2375	$2000	$1550
S. A. E. Rating	27.20	27.20	28.90	27.20	27.20	28.90	28.90	27.20	27.20	27.23	32.40	27.20
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Pairs	Block	Block	Block	Block	Block	Block	Block
Bore, Stroke	4½x5½	4⅛x5¼	4¼x5½	4⅛x5¼	4⅛x5½	4¼x5½	4¼x5½	4⅛x5¼	4⅛x5¼	4⅛x5¼	4½x5	4⅛x5½
Valve Location	Left	Left	Right	Right	Right	Right	Right	Left	Left	Left	Left	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1000	1200	1200	1200	1800	1112	1295	1250	1000	1130	1500	900
Lubrication	Cir. spl.	Spl. pres.	Spl., pres.	Cir. spl.	Spl. pres.	Spl. pres.	Cir. spl.	Spl. pres.	Spl. pres.	Cir. Spl.	Cir. spl.	Cir. spl.
Cool. System	Centrifugal	Centrifugal	Pump	Thermo	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Fin. sheet	Fin. cast.	Fin. tube	Cell. cast.	Fin.-t. cast.	Cell. cast	Sq.-t. sheet	Cell. cast	Fin. cast.	Tube cast	Fin. sheet	Sq.-t. sheet
Carburetor	Schebler	Stromberg	Fletcher	Marvel	Stromberg	Stromberg	Stromberg	Schebler	Stromberg	Zenith	Schebler	Rayfield
Ignition, Make	Remy	Bosch	Eisemann	Eisemann	Bosch	Dixie	Eisemann	Bosch	Bosch	Bosch	Bosch	Swiss
Type, Control	Dual, hand	Duplex, hand	Dual, auto	Single, fixed	Single, hand	Hand	Single hand	Hand	Single, hand	Hand	Dual, hand	Single, hand
Governor Drive	.....	Motor	Motor	Motor	Motor	Duplex	Motor	Motor	Motor	Engine	.....	.....
Speed, M. P. H.	12	13½	16	15	16	14	15	16	15	14	15	12
Clutch Type	Wet disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry plate	Dry disc	Wet disc	Dry disc	Disc	.....	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Ind. C.	Selective	Selective	Selective	Selective	Friction	Selective
Located, Speeds	Unit M, three	Amid., three	Unit M, three	Unit M, three	Amid., three	Amid., 4	Unit M, four	Amid., three	Unit M, three	Amid., four	Inf.	Unit M, three
Driven by	Double chain	Top worm	Worm	Top worm	Top worm	Int. gear. 4	Top worm	Top worm	Top worm	Top worm	Double chain	Int. gear
Ratio Gear Red.	4.80-1	9.43-1	8.67-1	8.66-1	7.75-1	8.50-1	9.25-1	7.75-1	9.25-1	8.50-1	.....	7.00-1
Tor. Taken by	Sub.-f.	Springs	Torsion arm	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Radius rod	Springs
Propelled by	Radius rod	Radius rod	Radius rod	Springs	Radius rod	Springs	Springs	Springs	Radius rod	Radius rod	Radius rod	Springs
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	Platform	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	145	145	148	144	150	124, 142	144	145	148	163 or 180	120	144
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x4	36x4, 36x5	36x4, 36x4d	36x3½, 36x5	36x4, 36x7	36x5	34x3½, 36x6	36x3½, 36x7	36x4, 36x4d	36x4, x6, x4d	36x4, 36x5	34x4, 36x4
Driver's Seat	Left	Left	Left	Left	Left	Left	Left	Right	Left	Right	Left	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Right	Right	Centre

LOAD CAPACITY, 4000 POUNDS.

Make	Lange	Lip. Stewart	Little Giant	Mack	Mack	Mansur	Menominee	Modern	Mogul	Nel. & Le Moon	Netco	Niles
Model	B	G	16	A B	A B	.....	D	R	L W	E 2	D	E
Capacity	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Chassis Price	$2550	$2600	$2250	$2800	$2800	$2500	$2240	.....	$2000	$2250	$2350	.....
S. A. E. Rating	27.20	27.50	27.20	25.80	25.60	25.60	27.20	27.20	27.20	27.20	27.20	27.20
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Pairs	Pairs	Pairs	Block	Block	Block	Block	Block	Block
Bore, Stroke	4½x5¼	4⅛x5¼	4½x5¼	4x5	4x5	4x4½	4⅛x5¼	4⅛x5¼	4⅛x5¼	4⅛x5¼	4⅛x5¼	4⅛x5¼
Valve Location	Left	Left	Left	Right	Right	Left	Left	Left	Left	Left	Left	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	.....	Three	Three	Three
Max. R. P. M.	1250	1150	1100	1160	1160	1200	1210	.....	1200	1000	1200	.....
Lubrication	Cir. spl.	Spl. pres.	Cir. spl.	Spl. pres.	Cir. Spl., Grav.	Pressure	Cir spl.	Spl. pres.	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.
Cool. System	Thermo	Water pump	Cent. pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Cell. sheet	Cell. cast.	Cell. sh.	Cellular	Cell. sheet	Cell. cast.	Fin. sheet	.....	Cell. cast.	Sq.-t. sheet	Fin. cast.	Cell. sh.
Carburetor	Stromberg	Zenith	Schebler	Optional	Optional	Zenith	Stromberg	Zenith	Carter	Rayfield	Zenith	Stromberg
Ignition, Make	Bosch	Eisemann	Eisemann	Splitdorf	Splitdorf	Eisemann	Bosch	Bosch	Bosch	Bosch	Eisemann	Eisemann
Type, Control	Single, hand	Fixed	Dual, hand	Single, hand	Single, hand	Single, auto.	Single, hand	Single, fixed	Single, fixed	Dual	Single, fixed	Single, hand
Governor Drive	Motor	Motor	.....	Motor	Camshaft	Shaft	D. shaft	.....	Motor	Motor	D. shaft	Motor
Speed, M. P. H.	15	15	15	16	17.75	16	14	.....	15	14	15	15
Clutch Type	Wet disc	Cone	Dry disc	Dry disc	Dry disc	Wet disc	Dry disc	Dry disc	Dry plate	Dry disc	Dry plate	Dry plate
Trans. Gearset	Ind. C.	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Amid., three	Amid., three	Unit M, three	Unit M, three	Unit M, three	Unit M. three	Unit M. 3	Unit M. three	Unit M. three	Unit M. three	Unit M, three	Amid., three
Driven by	Double chain	Top worm	Top worm	Top worm	Double chain	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm
Ratio Gear Red.	9.21-1	9.25-1	7.75-1	7.75-1	6.99-1	7.00-1	9.25-1	8.50-1	7.75-1	8.75-1	7.50-1	8.50-1
Tor. Taken by	.....	Springs	Springs	Springs	Torque tube	Springs	Springs	Springs	Torsion tube	.....	Springs	Springs
Propelled by	Radius rod	Springs	Springs	Springs	Radius rod	Springs	Radius rod	Radius rod	Radius rod	.....	Springs	Springs
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	136	158, 165	144	144 or 162	162, 144	124	144	150	138	Optional	144	150
Tire Type	Solid	Solid	Solid	Solid	Solid	Cushion	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x4, 38x6	36x4, 36x4d	36x4, 36x6	36x4, 36x4d	36x4, 36x4d	36x4½, 36x6	36x4, 36x6	36x4, 36x4d	36x5, 38x4d	36x4, 36x7	36x4, 36x6	36x4, 36x7
Driver's Seat	Left	Left	Right	Left	Left	Left	Left	Right	Left	Right	Left	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	Centre	.....	Centre	Centre	Centre	Centre

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LOAD CAPACITY, 4000 POUNDS.

Make	Old Reliable	Packard	Palmer	Paulding	Peerless	Pierce Arrow	Piggins	Reo	Republic	Rowe	Sandow	Sandow
Model	.....	2 E	.....	H H 1	T C 2	.....	.....	J	A	C D W	.....	.....
Capacity	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Chassis Price	$2750	$2800	$1975	$1950	$3000	$3000	$2750	$1650	$1785	$2800	$2350	$2000
S. A. E. Rating	29.00	25.60	27.20	30.00	32.40	25.60	.....	27.20	27.20	25.62	27.20	27.20
Engine Cyls	Four	Four	Four	Four	Four	Four	.....	Four	Four	Four	Four	Four
How Cast	Pairs	Block	Block	Block	Pairs	Pairs	.....	Pairs	Block	Block	Block	Block
Bore, Stroke	4½x5	4x5½	4⅛x5¼	4¼x6	4½x6½	4x5½	4¼x5½	4⅛x4½	4⅛x5½	4x5	4⅛x5¼	4⅛x5¼
Valve Location	Opposite	Right	Left	Right	Opposite	Opposite	.....	R. & H.	Right	Left	Left	Left
No. Main Bear.	Three	Four	Three	Four	Three	Three	.....	Three	Three	Three	Three	Three
Max. R. P. M.	.....	1000	.....	1000	925	1050	.....	1200	1100	1100	1000	1000
Lubrication	Spl. pres.	Pressure	Cir. spl.	Spl. pres.	Spl.	Pressure	.....	Cir. spl.	Spl. pres.	Pressure	Cir. spl.	Cir. spl.
Cool. System	Centrifugal	Centrifugal	Centrifugal	Thermo	Gear	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Fin. sheet	Cellular	Cell. cast.	Z-Z-t. sheet	Fin. sheet	Fin. cast.	.....	Fin.-t. cast.	Fin. sheet	Sq.-t. sheet	Cell. sheet	Cell. sheet
Carburetor	Stromberg	Packard	Stromberg	Kingston	Stromberg	Pierce Arrow	.....	Johnson	Stromberg	Rayfield	Stromberg	Stromberg
Ignition, Make	Bosch	Dixie	Bosch	Kingston	Remy	Optional	.....	National	Bosch	Bosch	Bosch	Bosch
Type, Control	Single, hand	Hand	Single, fixed	Dual, hand	Dual, hand	Hand	Magneto, bat.	Dual, hand	Single, fixed	Single	Single, hand	Single, hand
Governor Drive	.....	Motor	Motor	.....	Motor	Motor	.....	Motor	Suction	Motor	Motor	Motor
Speed, M. P. H.	16	14	15	13½	16	16	.....	15	13	.....	18	18
Clutch Type	Wet disc	Dry disc	Dry disc	Dry disc	Cone	Cone	Cone	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit J, three	Amid., four	Unit M, three	Unit M, three	Amid., three	Unit M, three	....., three	Amid., three	Unit M, three	Unit M, four	Unit M, three	Unit M, three
Driven by	Double chain	Top worm	Top worm	Int. gear	Top worm	Top worm	.....	Double chain	Int. gear	Top worm	Double chain	Top worm
Ratio Gear Red.	8.23-1	7.25-1	9.00-1	8.00-1	6.20-1	7.00-1	.....	8.76-1	.....	.....	7.00-1	7.75-1
Tor. Taken by	.....	Torsion arm	Springs	Springs	Springs	Torsion arm	.....	Torque arm	Springs	Springs	.....	Springs
Propelled by	Radius rod	Radius rod	Radius rod	Springs	Springs	Radius rod	.....	Radius rod	Springs	Springs	Radius rod	Springs
Springs, For.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....,	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	120	144 or 168	144	160	145	150	114	146	144	144	171	171
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	.....	Solid	Solid	Solid	Solid	Solid
Tire Sizes	34x4, 36x4d	34x4, 34x4d	36x3½, 36x3½d	36x4, 36x4d	36x4, 36x4d	36x4, 36x4d	.....	36x4, 26x3½d	34x4, 34x6	34x4, 36x3½d	36x4, 36x4d	36x4, 36x4d
Driver's Seat	Right	Left	Left	Left	Right	Right	Right	Left	Left	Left	Right	Right
Control Levers	Right	Left	Centre	Centre	Right	Right	Right	Centre	Centre	C. & L.	Centre	Centre

LOAD CAPACITY, 4000 POUNDS.

Make	Sanford	G. A. Schacht	Selden	Selden	Service	Signal	Standard	Steel	Sterling	Sullivan	Superior	Tower
Model	S	.....	J C	J W L	140	J	70	C	.....	E	C	.....
Capacity	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Chassis Price	$2100	$2800	$2100	$2350	$2250	$2300	$2300	$2250	$2800	$2250	$1800	$1600
S. A. E. Rating	29.00	29.00	22.50	27.20	27.23	27.20	27.20	27.20	25.60	27.20	22.50	19.61
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Block	Block	Block	Block	Block	Block	Pairs	Block	Block	Block
Bore, Stroke	4¼x5½	4¼x5½	3¾x5¼	4⅛x5	4⅛x5½	4⅛x5¼	4⅛x5¼	4⅛x5¾	4x5¾	4⅛x5½	3¾x5	3½x5
Valve Location	Right	R. & H.	Left	Left	Right	Left	Left	Right	Right	R. & H.	Head	Left
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	.....
Max. R. P. M.	1500	1000	1146	1150	1700	1295	1050	1150	1040	1350	1100	1200
Lubrication	Spl., pres.	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.	Spl. pres.	Spl., pres.	.....	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.
Cool. System	Water pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Water pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Thermo
Radiator Type	Fin.-t. cast.	Cell. cast.	Sq.-t. sheet	Sq.-t. sheet	Fin.-t. cast.	Fin. cast.	Fin.-t. cast.	Cell. sheet	Fin. cast.	Fin. sheet	Cell. sheet	Sq.-t. sheet
Carburetor	Schebler	Schebler	Stromberg	Stromberg	Stromberg	Stromberg	Schebler	Stromberg	Holley	Holley	Stromberg	Stromberg
Ignition, Make	Splitdorf	Bosch, DU4	Bosch	Bosch	Eisemann	Eisemann	Eisemann	At. Kt.	Eisemann	Bosch	Eisemann	Bosch
Type, Control	Dual	Single, hand	Single, fixed	Single, fixed	Single, hand	Single, fixed	Fixed	Single, auto	Single, auto	Single, fixed	Single, fixed	Single, hand
Governor Drive	Suction	Motor	Motor	Motor	.....	Motor	Motor	Motor	Motor	.....	Automatic	.....
Speed, M. P. H.	14	14	13	13	14	15	15	14.50	14½	14	15	15
Clutch Type	Dry disc	Cone	Dry disc	Dry disc	Dry plate	Dry disc	Dry disc	Wet disc	Dry disc	Dry plate	Dry disc	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Ind. clutch	Selective	Selective	Selective	Selective
Located, Speeds	Unit M, three	Amid., three	Unit M, three	Unit M, three	Amid., three	Unit M, three	Amid., three	Unit J, three	Unit M, three	Unit M, three	Unit M, three	Unit M, three
Driven by	Internal gear	Top worm	Int. gear	Top worm	Top worm	Top worm	Top worm	Double chain	Top worm	Top worm	Int. gear	Top worm
Ratio Gear Red.	9.00-1	8.67-1	9.45-1	9.25-1	7.75-1	9.25-1	7.75-1	9.52-1	7.70-1	7.75-1	9.00-1	8.75-1
Tor. Taken by	Springs	Torque arm	Springs	Springs	Springs	Springs	Springs	.....	Springs	Springs	Springs	Springs
Propelled by	Springs	Radius rod	Springs	Springs	Springs	Radius rod	Radius rod	Radius rod	Springs	Springs	Springs	Springs
Springs, For.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	150, 165	156	150	150	160	150	140, 164	115	148	150	144	135
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x4, 36x7	38x4, 38x4d	36x4, 36x6	36x6, 36x6	36x4, 36x7	34x4, 36x4d	36x4, 36x6	38x5, 40x4d	36x4, 36x4d	36x4, 36x6	36x4, 36x6	34x3½, 34x3½d
Driver's Seat	Left	Left	Optional	Left	Left	Left	Left	Right	Left	Left	Left	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Right	Centre	Centre	Centre	Centre

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Automobile Export Record Smashed

Despite Embargo by Great Britain and Italy and Russian Import Duty Trade Increases $13,000,000.

Despite the many obstacles that were set up against the automobile export business from this country by European countries, the value of this trade totaled $138,289,514 during 1916, an increase of nearly $13,000,000 as compared with 1915.

Great Britain and Italy prohibited the importation of automobiles during the latter part of the year and France imposed an import duty of 70 per cent., while business with Russia was greatly hampered by the freight congestion at ports in that country. Shipping conditions also operated against the business, ocean freights being abnormally high and cargo space to the far east being difficult to obtain.

In the face of all these obstacles the exports of automobiles from this country broke all records. A total of 80,850 motor vehicles were exported during the year, with an aggregate value of $96,595,861, an increase of 16,892 vehicles as compared with the previous year and an increase in value for the year of $1,711,468. Truck exports, however, during the year decreased from 22,094, valued at $59,839,303 in 1915, to 18,903, valued at $52,870,774 in 1916.

The exports of passenger cars to foreign countries increased from 41,864, valued at $35,045,090, in 1915, to 61,947 cars, valued at $43,725,087, last year.

There was also exported during 1916 automobile parts valued at $24,001,060, tires worth $15,211,943, and automobile engines valued at $2,480,650, making a total of $138,289,514, as compared with $125,306,568 in 1915. Of the total exports, France took the most, buying motor vehicles from this country to the value of $23,279,846, mostly trucks. England bought $17,083,616, also mostly trucks. Exports to all other European countries decreased from $22,490,725 in 1915 to $14,519,483 last year. European Russia took $8,546,563 worth of automobiles and automobile parts, representing government purchases mainly. Canada was also a big buyer, taking $8,965,200, which was nearly twice the amount of her purchases of similar products in 1915, and almost as much as all of the rest of the Western Hemisphere combined, which totaled $9,567,167.

Heavy purchases were also made by Australia, which took cars to the value of $5,727,233; British East Indies, $3,359,379, and other Asia and Oceania, $10,842,305.

CHICAGO SPEEDWAY MEN ARRANGE EVENT CARD.

At a recent meeting of the Chicago Speedway Association three professional events were carded for the coming season. The first will be a 250-mile event to be held on June 9, with purses aggregating $20,000. The second race is planned for a date in July and the third for Labor Day. Entry blanks for the first event will be sent out in the near future.

The first big event on an American speedway this year will be held at Sheepshead Bay on May 19, when the 150-mile Metropolitan trophy will be contested. The 500-mile contest at Indianapolis will be held on May 30 and the Chicago event will be third.

KELLY-SPRINGFIELD BUYS FACTORY IN BUFFALO.

The Kelly-Springfield Tire Co., Akron, O., has acquired the plant of the Northland Rubber Co. at Buffalo, N. Y. This plant and the one at Wooster, O., will be used to maintain production during the period of transferring the main equipment from Akron to Cumberland, Md.

APPROVE CHANGE OF TITLE OF S. A. E.

At a meeting of the S. A. E., held in New York City on Feb. 20, the necessary changes in the charter to change the organization's title to "Society of Automotive Engineers," were made and the new name officially approved.

Overland Reports Big Year

Largest Business Volume Cut Into by the High Costs of Manufacture.

The Willys-Overland Co. reports net earnings for 1916 of $10,016,420, as compared with $11,201,255 in 1915 and $3,327,499 in 1914. The decrease in the net for the past year is ascribed to the higher material costs that affected the profits. President John N. Willys of the company states that the principal increase in the costs were of a temporary character, notably a decided increase in the public demand for closed cars and the voluntary policy of writing down the value of tool equipment. In its balance sheet the company carries good will, patents, trade marks, etc., as an asset of $14,059,932. Cash in banks and on hand at the end of the year amounted to $11,404,950, against $4,023,342 at the close of 1915.

President Willys also announced that at present the company's unfilled orders for immediate delivery are over 20,000 cars, the largest amount in the company's history.

M. C. MEIGS PUBLISHES THE CHICAGO AMERICAN.

M. C. Meigs, well known in the automobile trade through his connection with the advertising firm of Lord & Thomas of Chicago, has resigned to accept a position as assistant publisher of the Chicago American.

U. S. Rubber Makes Increase

Funds Sufficient to Pay Entire Debt Within $12,000,000 and Provide Further Working Capital.

The United States Rubber Co. reports gross sales for 1916 of $126,759,000, an increase of $33,898,000, or 36 per cent., as compared with 1915. The net profits for the year were $11,226,000, and the surplus for the common stock was $5,443,112, equal to more than 15 per cent. on the outstanding shares. In the pamphlet report it is stated that the most important event in the year was the funding of the company's indebtedness through an issue of $60,000,000 first and refunding five per cent. mortgage bonds. President Samuel P. Colt made the following statement in connection with the report: "The company is now provided with funds wherewith to pay its entire debt and the debts of its subsidiaries with the exception of $9,000,000 General Rubber Co. debentures due Dec. 1, 1918, and $2,600,000 Canadian company bonds, due Oct. 1, 1916. In addition to the payment of the indebtedness, further working capital is also provided

"The crude rubber plantations in Sumatra were steadily developed during the year and the amount of rubber produced was in excess of preliminary estimates. The plantations should prove to be one of the most valuable assets of the company."

"HOW TO MEASURE SCREW THREADS."

The Greenfield Tap and Die Corp., Greenfield, Mass., has issued an interesting booklet entitled, "How to Measure Screw Threads," which as the title suggests, describes the old and new methods of gauging threads to determine the accuracy of their pitch and lead. The book will be mailed free upon application to the company.

FAGEOL MAY BE BUILT IN EASTERN FACTORY.

The Fageol car, manufactured by the Fageol Motors Co., Oakland, Cal., and which made a big hit at the recent shows as one of the most luxurious machines on exhibition, may be built in an eastern plant according to reports from the Pacific Coast. It is understood that the makers are considering a site near New York City.

CHEVROLET NET INCOME FOR 1916 $7,095,071.

The Chevrolet Motor Company for the year ending Dec. 31, 1916, earned $7,095,071 net. To this amount there was added during the year $22,374,517, making a total increase in surplus of $29,469,588. This total surplus amounts to $31,123,274. Current and working assets, $79,434,709.

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FISK

Advertising Bulletin for March

ARE you taking advantage of the great advertising campaign for Fisk Tires that is now gathering its tremendous sales momentum and spreading the message of Fisk to every nook and corner of the Country? Now is the time! It is not too late to get all the benefits of this immense sales force. This is the way we are helping Fisk Dealers this month—

SATURDAY EVENING POST	Two Pages
COLLIER'S WEEKLY	Full Page
COUNTRY LIFE	Full Page in color
MOTOR LIFE	Full Page in color
TOWN & COUNTRY	Full Page in color
VOGUE	Full Page in color
HARPER'S BAZAR	Full Page in color
AMERICAN MOTORIST	Full Page in color
YOUTH'S COMPANION	Half Page
AMERICAN BOY	Half Page

34 State Farm Journals in all sections of the United States using pages and covers in colors.

That is real advertising—and what are you doing to reap the benefits that will come from it.

Write Dept. A at once for full details of Fisk proposition.

THE FISK RUBBER COMPANY
of N. Y.
Chicopee Falls, Mass.

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PORTABLE THE AMERICAN ELECTRIC GARAGE · TIRE · PUMP · STATIONARY

A 100% Efficient

Rotary Principle Air Pump

Supplying air direct to the tires or operated in connection with a storage tank. Direct or alternating current can be used. Compact and can be placed anywhere. Noiseless, quick to inflate, dust and dirt proof, and automatically lubricated.

The American is guaranteed to meet all service requirements, to afford full satisfaction and to be durable. It is in use in five hundred stations and garages.

Jobbers: The American Electric is the no trouble pump that you can sell. It will supply all the air wanted and fit in any system. Write today for special jobber's discounts.

AMERICAN ELECTRIC AIR PUMP CO.

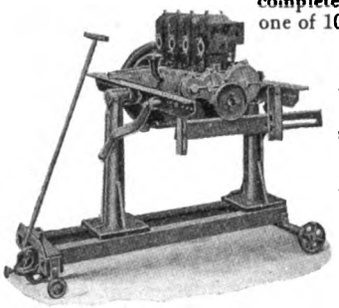
222 Penn Avenue PITTSBURGH, PA.

EVERY WAY

ENGINE STAND

An equipment absolutely necessary in every garage, service station and repair shop for work that entails the removal of the engine from the chassis. It saves the time and labor that makes the easiest profits earned.

It may be portable or stationary, with adjustment to take any engine, and it is so designed that the engine may be turned a complete circle and held in any one of 100 different positions.



Portable Stand, Carrying Four Cylinder Engine, Showing Front Suspension Bar.

With the engine always accessible and placed so that accurate work can be done, great saving of time and labor is possible.

PORTABLE $49.00

STATIONARY $37.00

Our specialties include Universal Auto Presses, Hilite Portable Floor Cranes, Quick Action Portable Benches, and a full series of highest grade garage air compressors.

Sold by Jobbers. Write today for Catalogue No. 44 A & G

UNITED ENGINE & MANUFACTURING CO.

HANOVER, PENNSYLVANIA

John M. Studebaker Dies at South Bend

John M. Studebaker, honorary president of the Studebaker Corp., manufacturers of Studebaker cars, died at his home in South Bend, Ind., on March 16 at the age of 84 years.

His benefactions in the city of South Bend, Ind., made him one of its most prominent and popular citizens. He gave the city an electric fountain and induced his company to build a Y. M. C. A. building. He was married to Mary Jane Stull on Jan. 2, 1860, and in 1910 they celebrated the 50th anniversary of their wedding.

COVERT GEAR OFFICES MOVED TO DETROIT.

F. E. Mosher, secretary and general manager of the Covert Gear Co., Inc., of Lockport, N. Y., manufacturers of transmissions, in speaking of the company's action in moving the entire sales, engineering and service departments to Detroit, said:

"By establishing not only our sales, but also our engineering and service headquarters at Detroit, we feel that we are initiating a movement which will be followed eventually by every parts and accessory concern located away from the hub of the motor industry. Through our Detroit offices it will now be possible to maintain close relations with our clients in Detroit and vicinity which our volume of Michigan business deserves."

All correspondence relative to any of these three departments should be addressed direct to the Covert Gear Co., Inc., 967 Woodward Ave., Detroit, Mich., instead of Lockport, N. Y.

SUPPLY COMPANY IS FORMED.

The National Auto Supply Co. has been organized and incorporated at Rawlins, Wyo., with a capital stock of $100,000 to operate a chain of wholesale and retail auto supply houses in neighboring cities about Dallas, Tex. Besides carrying a full line of accessories and supplies the company will do tire repairing and storage battery repairing. The company is seeking jobbing connections with manufacturers of supplies and accessories.

DUESENBERG USES MOGUL.

The Muzzy-Lyon Co., Detroit, Mich., makers of Mogul Motor Bearings, have secured a contract from the Duesenberg Motors Corp. of New York City to supply the latter concern with Mogul bronze babbitt lined bearings for its 1917 motor production.

WILL MAKE AMCO CAR.

The American Motors, Inc., which was recently organized to facilitate the export of cars to foreign countries, will manufacture a car designed by D. M. Eller, the company's engineer. It will be called the Amco and is designed to meet the needs of foreign conditions.

Goodrich Preferred Reduced $900,000

At the annual meeting of the stockholders of the B. F. Goodrich Co., Akron, O., a cancellation of 9000 shares of the preferred stock of a par value of $900,000 was ratified, reducing the outstanding amount of that class of stock to $26,400,000.

At a subsequent meeting of the directors the following officers were elected: President, B. G. Work; vice president, A. H. Marks; vice presidents, H. E. Raymond, E. C. Shaw; second vice presidents, C. B. Raymond, W. A. Means; secretary and assistant treasurer, Guy E. Norwood; treasurer, L. D. Brown; assistant treasurer, J. C. Lawrence. The following executive committee was appointed by the directors: B. G. Work, A. H. Marks, H. E. Raymond, E. C. Shaw, C. B. Raymond, W. A. Means and A. B. Jones. L. D. Brown and F. C. Van Cleef were added to the operating committee.

NATIONAL AND HUPP PRICES ADVANCED.

Both the National Motor Vehicle Co. of Indianapolis, Ind., and the Hupp Motor Car Co. of Detroit, Mich., have advanced the prices of all their models $100 each. The Hupp company has one exception to the prices in the new schedule, the five-passenger sedan continuing to sell at $1735.

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ACCESSORY AND GARAGE JOURNAL Times Building Pawtucket, R. I.

(Entered as second class matter, Dec. 30, 1911, at the Postoffice at Pawtucket, R. I., under Act of Congress of Mar. 3, 1879.)

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Scored Cylinders

Made Equal to New Without Reboring. We will fill your scores with a nickel and silver composition, with our new process. No heating to warp cylinders. Same piston and rings used. Complete information free. Reshipped 24 hours after received. We also sell the outfit to garages. Experience not necessary.

NEW CHEMICAL PROCESS CO,
6 W. Ross St. Wilkes-Barre, Pa.

GEARS

FOR TRANSMISSIONS AND DIFFERENTIALS
Write our Sales Department About Your Requirements.

SERVICE GEAR & MACHINE CO.
Reading Pennsylvania

BARGAINS

MAGNETOS.

Bosch Du-4 Variable spark	$30.00
Bosch Du-4 set spark	25.00
Bosch D4 and Dr4	25.00
Bosch D6 and Dr6	30.00
Splitdorf 4 cyl. Dixie, high tension	25.00
Splitdorf 4 cyl., Models A, T, X and D	10.00
National 4 cyl. low tension	8.00
Briggs 4 cyl. low tension	8.00
Remy 4 cyl., type R L	15.00
Simms SU4 high tension	22.00

GENERATORS.

Deaco 6 volt	$12.00
Auto Lite 6 volt	15.00

COILS.

Splitdorf T S type	$10.00
Splitdorf box type	6.00
Bosch type A	12.00
Remy box coils	6.00
Remy type LC and LE	8.00
Briggs box coils	6.00

PREST-O-LITE TANKS.

Model B., fully charged	$8.00
Model E., fully charged	7.00

We REPAIR any make magneto, coil, lighting generator or starter and give 24 hour service. Member Detroit Automobile Trade Association.

Detroit Magneto Exchange
192 Grand River Ave, Detroit, Mich.

SPRINGS

Coiled and Flat.

Steel, Brass and Phosphor-Bronze Springs, Cotters, Small Washers.

16 lbs. Assorted Springs, $2.00
25 lbs. Assorted Cotters, $3.00

Every repair shop should have this assortment in stock. Send for Catalog.

HUBBARD SPRING WORKS,
400 J St., Pontiac, Mich.

IF YOU ARE IN BUSINESS

Like the rest of the world—to accumulate the cold green profit—then the more interest you take in Puritan Messages—the more interest your bank account will give.

CARBURETORS—Schebler, model O, 1¼", $8.20; R/L, 1¼", $10; Model R, 1¼", $10. Stromberg, 1", model K/L, $8.20; B/3, 1", $8.20; Bennett, 1½", $3.95. Kingston & Holly, 1¼" top intake, $4.50. Kingston & Holly for Fords, $5.40.

MAGNETOS—Bosch D/U 4 high tension set spark, $30; D/U variable spark, $35; D/U 6 high tension, $40; dual 6 cyl. type with coil, $45. Eisemann 4 cyl. high tension, $25; 6 cyl. high tension with coil, $35. Mea 4 cyl. high tension with coil, $30. Mea 6 cyl. high tension with coil, $35. Remy model S & R D, $10. Simms S/U 4 anti-clockwise high tension, $20; S/U 6 high tension anti-clockwise, $20; S/U 6 high tension clockwise, $25. Splitdorf 4 cyl., many models, $10; Splitdorf 6 cyl., $15.

RADIATORS—Ford straight front black enamel honeycomb radiators, $20. Ford V shaped brass honeycomb, $30. V shaped German silver, $20. King 1916 model E, $25. Studebaker model 25, 1913, $22.50. Everitt model 30, 1913, $22.50. Paige model 36, 1913, $22.50. Oakland model 40, 1910, $20.

RIMS—Stanweld 32x3½ S S, $2.50. Firestone 36x4 Q D clincher, $2.30. Baker 36x4½, $3.50; clincher and S S, 36x4 and 34x4 S S, $2.60; 32x3½ S S, $2.55. Detroit 34x4 clincher, $2.70; 36x4, 1912, S S, $2.70. Kelsey, 32x3½, No. 20, $2.30; 34x4, No. 30, S S and clincher, $2.60.

TOPS—Ford one-man tops, rubber, $22.50; domestic mohair, $25; silk mohair, $27.50. One-man mohair tops that will fit Overland 75, Dort 1914, King 4 cyl., Maxwell 25, 1914, including dust boots and inside curtains, $37.50. One-man domestic mohair for 5-passenger cars complete with dust boot and inside curtains, $37.50. One-man domestic mohair tops, 7-passenger cars, including dust boot, $50. In ordering these tops ask for measurement chart. We will be pleased to send samples of material upon request and assure you our prices are lower than you can buy tops for elsewhere.

Write for our Bargain Bulletin, which contains hundreds of other bargains not listed here.

Puritan Machine Company
All Parts for All Cars
51 Tenth Street, Detroit
U. S. A.

SAVE 50% ON PARTS

Wheels, Axles, Gears, Bearings, Cylinders, Pistons, Crankshafts, Camshafts, Crank Cases, Transmissions, Hubs, etc., for E. M. F. 30, Maxwells Q, F, K, G, Overland 38, 42, Reo 1910, Empire 20, Buicks 10, 17, 19, Oakland 1910, Cadillac 1909-12, Mitchell 1907-12, Flanders 20, Warren 30. Ask us about any part for any Standard Make or Orphan Car. Prompt service. Money refunded if not satisfied. AUTO PARTS CO., 4100 Olive St., St. Louis, Mo.

Debts Collected Quickly! Established 25 years; same address. WM. H. DODD, Dept. D, 87 Nassau St., New York.

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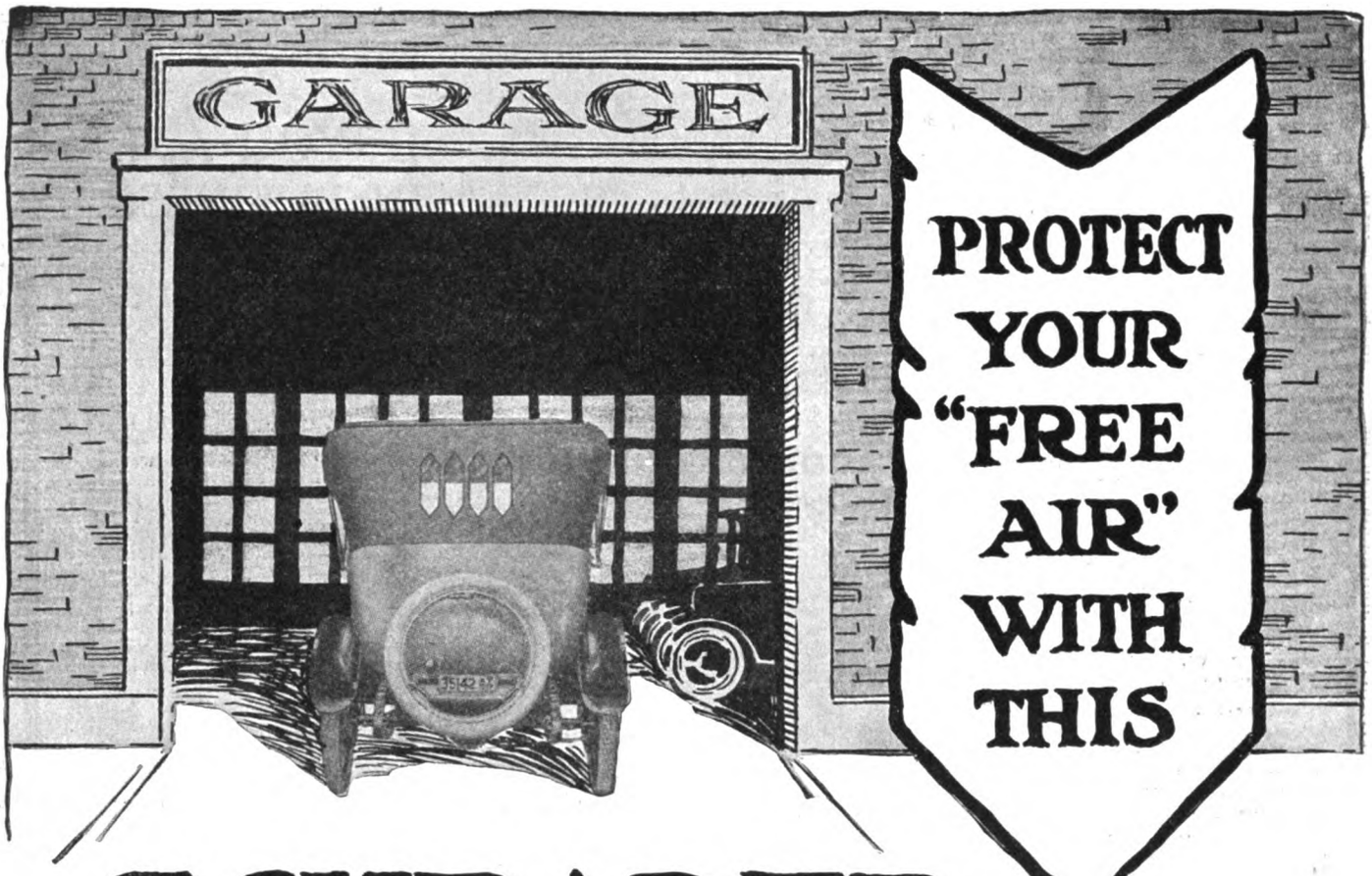


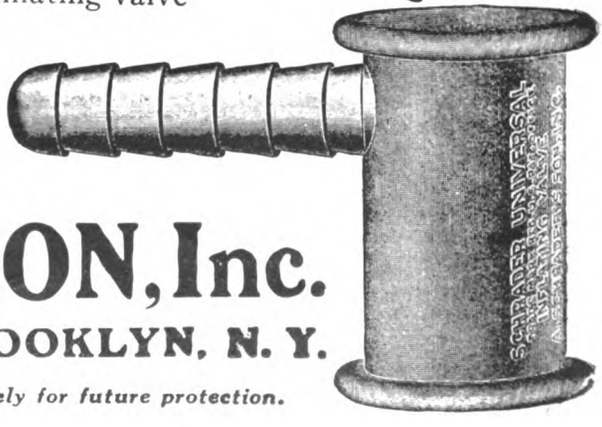
PROTECT YOUR "FREE AIR" WITH THIS

SCHRADER
UNIVERSAL INFLATING VALVE

Every successfully and efficiently operated garage, repair shop and agency station where "Free Air" is distributed should have a SCHRADER Universal Inflating Valve to prevent surplus air escaping after tires are inflated. The SCHRADER Valve automatically stops all air pressure the minute it is released from the tire valve. When the air is to be forced into the tire this is simply done by pressing the nozzle of the inflating valve against the tire valve.

Will fit any diameter of hose from ¼ to ⅝ inch.

PRICE $1.00



A. SCHRADER'S SON, Inc.

783-793 Atlantic Ave. BROOKLYN, N. Y.

Unless you have a SCHRADER Valve now, install one immediately for future protection.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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ACCESSORY MANUFACTURERS!

Illustrate Your Merchandise In the Catalogs We Furnish Through Dealers to Car Owners.

More Than 400 Supply Dealers Used Our Catalogs in 1916

FOR PARTICULARS ADDRESS

CATALOG SYSTEMS CO., - - Fisher Building, CHICAGO

ACCESSORY CATALOGS

We will supply them to Accessory Dealers while they last.

Any Accessory Dealer or any Hardware Merchant in the United States can have a Limited Supply of Accessory Catalogs for Distribution Among His Own Customers

AT ONE CENT EACH

While the supply lasts. The only requirements we make are that you are selling Accessories; that you have a satisfactory credit rating; that you agree to distribute them within 90 days from date of their receipt. As our supply is limited we are obliged to adopt the above policy.

FIRST COME! FIRST SERVED!

For Further Particulars Address

Catalog Systems Company
Wilmette, Illinois or Fisher Building, Chicago

ACCESSORY MANUFACTURERS!

Our catalogs go only to Car Owners and Supply Dealers.
Such a circulation has character.

Our catalogs reach car owners in every state.
Such a circulation has breadth.

Our rates for representation are low. The test of all advertising should be
Character of Circulation---Breadth of Circulation---Low Cost.

Our advertising embodies these features.

FOR PARTICULARS ADDRESS

CATALOG SYSTEMS CO., - - Fisher Building, CHICAGO

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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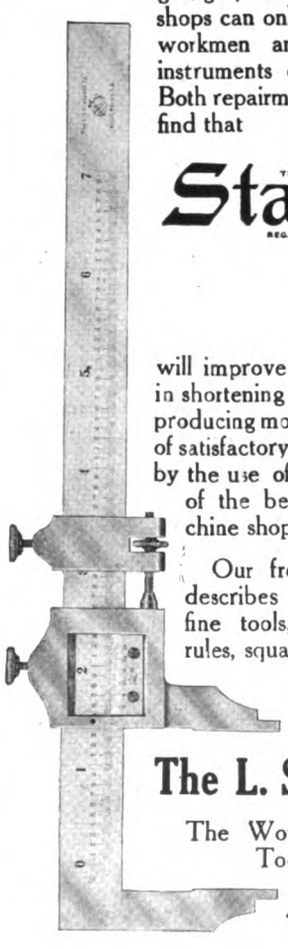
Accurate Repairs

on all kinds of automobile work—in garages, service stations and repair shops can only be obtained by skilled workmen and precision measuring instruments of the highest quality. Both repairman and manufacturer will find that

TRADE MARK
Starrett
REG. U.S. PAT. OFF.
Tools

will improve machinists' work, both in shortening measuring oprations and producing more accurate work. Years of satisfactory service have been given by the use of Starrett Tools in many of the best repair shops and machine shops in the country.



Our free catalog No. 2 GT describes 2100 styles and sizes of fine tools, some of which are: rules, squares, levels, micrometers, depth gages, vernier calipers, etc. Write for your copy.

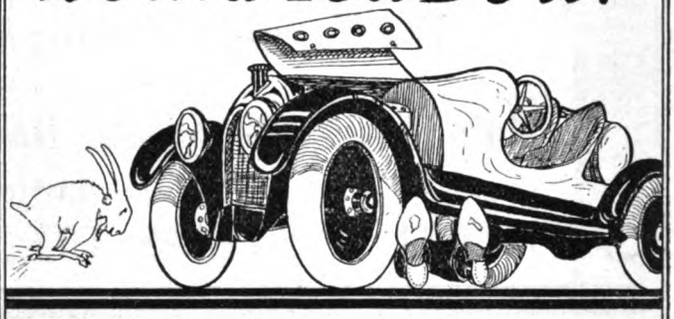
The L. S. Starrett Co.

The World's Greatest Toolmakers,

Athol, Mass.

42-613

Would You Do it?



When Bolts and Nuts are far remote,
And refuse to turn—it gets your Goat;
Specialist or Expert, which ever it is,
Without the tools you lose the Biz!

Always the Right Tool

The **Bay State Autokit** wrench sets are combinations selected to meet the requirements of the car owner, the service station or the repair shop. They are complete, with a socket to fit every bolt, nut or cap screw of any car or truck, and a ratchet adjustable shank with which work can be done quickly and efficiently. The biggest set of tools in any private or public garage.

With **Bay State Autokits** the best of work can be done, time and labor saved, and satisfaction of customers and substantial profit insured.

BAY STATE AUTOKIT No. 3

Set No. 1, 31 Sockets	$10.00
Set No. 2, 12 Sockets	7.50
Set No. 3, 11 Sockets (Ford Car outfit)	4.00

Every Autokit Set is Absolutely Guaranteed.

JOBBERS and DEALERS—Send for Discounts.

GEO. A. CUTTER

Sales Agent

TAUNTON MASS.

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Retail Price $5.00 PER SET

Give Car_____
Model_____
Year_____
When ordering

PEDEX

THE ADJUSTABLE EXTENSION PEDAL

Garages, Service Stations and Accessory Dealers should all carefully consider PEDEX.

1. *A necessity for the family car.*
2. *Insures proper leverage.*
3. *Eliminates driver cushion.*
4. *Rigid when attached.*
5. *Leaves regular pedals clear.*
6. *Adjustable to any length desired*
7. *Attachments to fit all cars.*
8. *Absolute safety.*

Send for Literature, Discounts, Etc.

AMERICAN CAR ACCESSORIES CO.

Dept. S. A. S. Laboratories, Inc. 537 W. 21st St., New York City.

Garford MOTOR TRUCKS

Trucks of 1, 1½, 2, 3½, 5 and 6 ton capacity. 4½, 7 and 10 ton Tractors.
The Garford Road Builder.

THE GARFORD MOTOR TRUCK CO., Lima, Ohio.

Bunting Bearing Bronze

IN Cored Bars

Bunting Bearing Metal is standard today with both Manufacturer and Repairman.

Is for sale by most any Jobber or can be purchased direct from us.

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approximate weight
A	1	½	12	2
B	1¼	½	12	2¼
C	1½	½	12	2½
D	1¾	½	12	3
E	2	1	12	3¼
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15¾
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	30

The Bunting Brass & Bronze Co.

727 Spencer Street Toledo, Ohio

FORD TYPE
$18 Set of Four
With Rings and Pins.
STOCK PATTERNS FOR CHALMERS, WHITE, REO and Others.

DODGE TYPE
$20 Set of Four
With Rings Only

Featherweight LIGHTER THAN ALUMINUM Pistons

Will Put "PEP" Into That Sluggish Motor.

Being one-third as heavy as the cast iron cannon ball type, they *increase* power and speed and *reduce* vibration, carbon deposit and wear on bearings, and *save* fuel.

Dealers Write Today For Discounts

FEATHERWEIGHT PISTON CO.

WEIGHT

11 Guyman Way.
Pittsburgh, Pa.

Make that Vacant Corner Pay Your Rent

AKRON-WILLIAMS
TIRE REPAIR EQUIPMENT

Every motorist who enters your doors is willing and anxious to have his tires and inner tubes repaired—kept in the best condition—till the last bit of mileage is taken out. To do the best work and make the best profits, you must have the best equipment—the AKRON WILLIAMS.

Used by 60 Leading Tire Companies.
(Names furnished on request.)

And sold and recommended by them to their dealers. Scarcely any other business pays such large and sure profits on such a small investment. We show you how to make money right from the start.

Send for our new "Booklet 12."

THE WILLIAMS FOUNDRY & MACHINE CO.
ASH STREET, AKRON, OHIO

Exclusive Californian Distributors:
Waterhouse & Lester Co., San Francisco and Los Angeles.

SELL SULLIVAN TRUCKS

One of the few staple and practical trucks on the market.

Our selling policy and proposition is the most liberal ever offered to the trade.

One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
Rochester, New York

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Yes, Sir! Here's Your Quart of

HAVOLINE OIL

"It makes a difference"

We like to handle Havoline because it always gives good service—and good service is the best asset of the garage man.

Have you noticed the big 1917 Havoline advertising drive? It is certainly moving the stock.

Indian Refining Company, New York
Incorporated
Producers and Refiners of Petroleum

WHITNEY ARBOR PRESSES

Found in shops of reputation

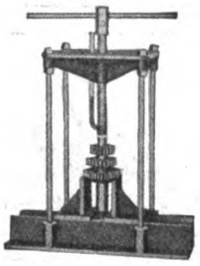
STOP HAMMERING!

And Use This Up-to-date Method

RELIABILITY

DURABILITY **SIMPLICITY**

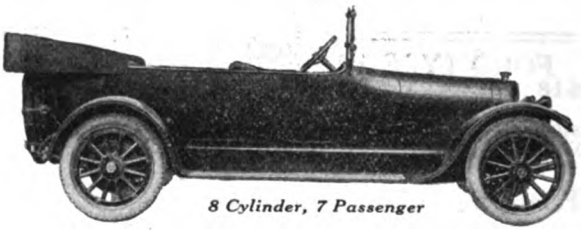
No. 1—30 Ton



No. 2—50 Ton

Manufactured exclusively by

LEWISTON MOTORS
LEWISTON, ME.
Write for Circular and Quotations



8 Cylinder, 7 Passenger

Apperson Roadaplane

Apperson cars have earned an enviable reputation for *economy* in *operating cost*—all due to clever designing. Elmer Apperson was not satisfied to build a car of beautiful lines—he believed in the old axiom "Handsome is as handsome does." Light weight, 3000 lbs., adds to life of tires, saves fuel cost. Built complete in Apperson modern plants under direct Apperson supervision. "The easiest riding cars in the world."

Four Models to Choose From	Code Word
6 cylinder, 4 passenger Roadster,	—Kalot
6 cylinder, 7 passenger Touring Car,	—Kalaet
8 cylinder, 4 passenger Roadster,	—Malot
8 cylinder, 7 passenger Touring Car,	—Malaet

Interesting financing proposition for automobile dealers in all parts of the world where the Apperson line is not represented. Complete catalog in English or Spanish and details promptly furnished.

Apperson Bros. Automobile Co.
308 Main Street Kokomo, Ind., U. S. A.
Cable Address "Jarab"

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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The elapsed time recorder

TIME RECORDS

OF

Repair Jobs——Pay Rolls——Rentals

Are Absolutely Accurate if Made by

THE CALCULAGRAPH

THE ELAPSED TIME RECORDER

Your Customers Are Satisfied--You KNOW What Jobs Are Profitable—
Your Workmen Are Relieved of Clerical Work

Send for Free Booklet W Illustrating a Complete Set of Forms for a Simple Time System for Garages

CALCULAGRAPH COMPANY, 1476 Jewelers Building, New York City

Don't Send Your Customers to Another Garage!

If you cannot repair electric starting and lighting equipment intelligently, your customer will go elsewhere for this service. He will take the rest of his trade with him. There is more money in electrical repairs than in any other department of the garage business. The demand is enormously increasing.

Weston Model 280

GARAGE TESTING INSTRUMENT

is the best, the most reliable and therefore the cheapest electrical equipment for you. It enables you to determine promptly and accurately the condition of the electrical equipment of any automobile, just where the trouble is and just how to remedy it.

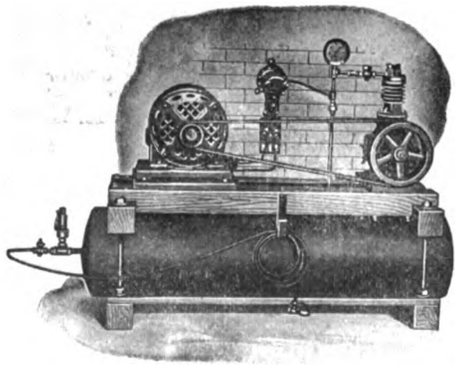
Write for our **Special Proposition.**

WESTON ELECTRICAL INSTRUMENT CO., 103 Weston Ave., Newark, N. J.

23 Branch Offices in the Larger Cities

GARDNER

STATIONARY FREE AIR UNIT



FOR

SERVICE ECONOMY DEPENDABILITY

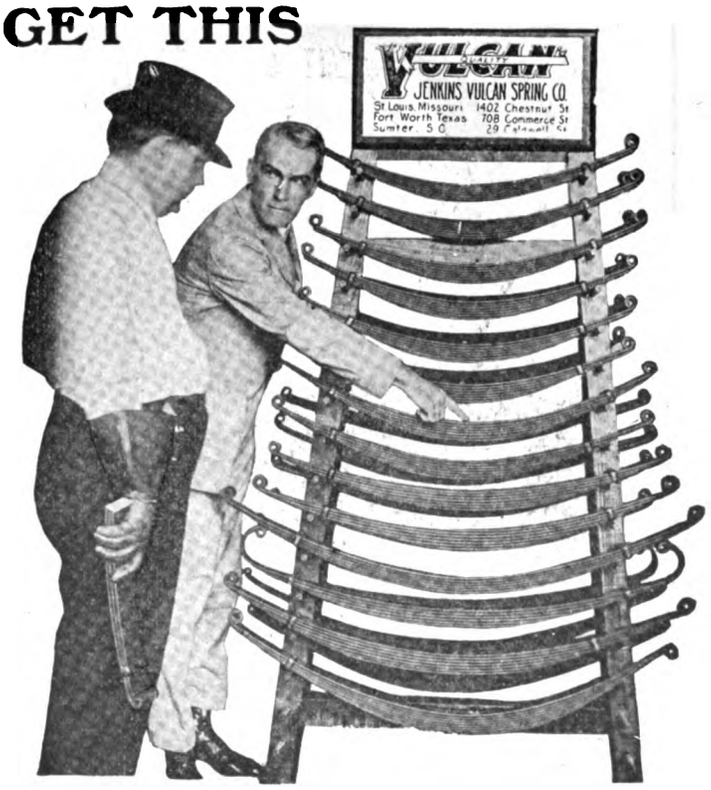
A Gardner Outfit of this type installed in ***your*** garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY

126 Williamson St., Quincy, Ill.

Singer Bldg	Fisher Bldg	5 First St.
New York City	Chicago	San Francisco

GET THIS



Jenkins Vulcan Spring Co.,

1402 Chestnut Street, St. Louis, Mo.

Gentlemen:—Please send proposition on agency for VULCAN springs.

Signed_____

Address_____

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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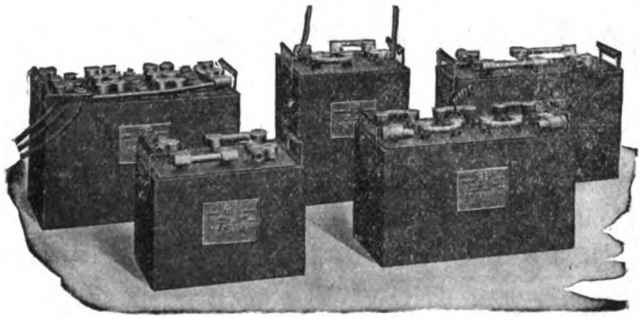


APOLOGIES and EXCUSES

DON'T BRING BACK CUSTOMERS

Quality alone counts. Titan Storage Batteries made with Titan (overload capacity) Grids insure satisfaction alike to dealers and customers.

Titan Batteries and Parts satisfy every demand of a First Class Service Station in variety, in quality, in price and prompt delivery.

If you place your own reputation and your own profit first it will pay you to write the

GENERAL LEAD BATTERIES COMPANY
CHAPEL STREET AND LISTER AVENUE
NEW YORK NEWARK, N.J. CHICAGO

PAUL G. NIEHOFF & CO. INC.

of CONTACT PARTS

Mr. Dealer—

This is "A Case of Good Business." WHY?

Because: It opens up a new field for you in the merchandising of contact parts for which there is an ever increasing demand.

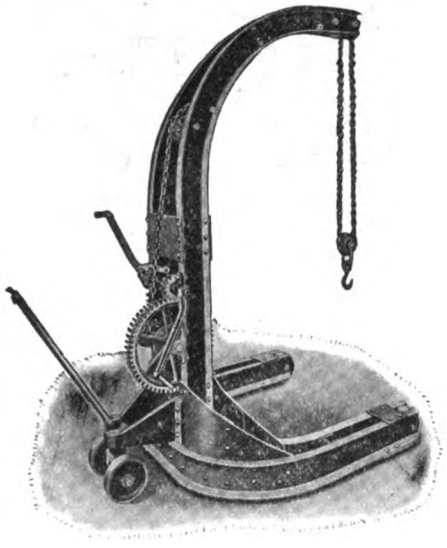
Because: It keeps those valuable parts systematized so you know just where to find them, instead of scattered all over the shop.

The Niehoff "Cash Register" is a real necessity and can only be appreciated after you have put it into service. Delivered prepaid with an assortment of contacts such as will fit all standard cars or others, as you specify.

Write today for FREE illustrated booklet on contact parts and full information in starter and generator brush equipment -- most comprehensive and up-to-date.

PAUL G. NIEHOFF & COMPANY, Inc., Dept. A
Metallurgical Laboratories - Chicago, Illinois

Ask your jobber about it



SAFETY FIRST

The "Lafayette" Portable Steel Crane

Made of steel—it will not break. Double locked with load. Safe. Low base. Ample power. Roller bearings. No garage or repair shop can afford to be without them. A complete hoisting and conveying machine.

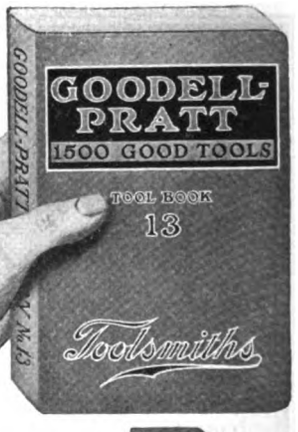
STANDARD SIZES

No.	Height	Overhang	Capacity	Ht. of Base	Weight	List
5	7'-6"	3'-0"	5000 lbs.	5 inches	900 lbs.	$100.00
4	6'-6"	2'-6"	4000 lbs.	7 inches	700 lbs.	$85.00
			3000 lbs.	6 inches	500 lbs.	$70.00

For Sale by Jobbers Everywhere or Write

The LaFayette Engineering Co., Mfgr's, LaFayette, Indiana

Reserve Your Copy Now.



This Book

shows over 1500 Good Tools for all trades. Every garage, every repair shop and every accessory dealer should have one.

It will be issued late in March; write for your copy now.

GOODELL-PRATT COMPANY
Toolsmiths
GREENFIELD
MASS., U.S.A.

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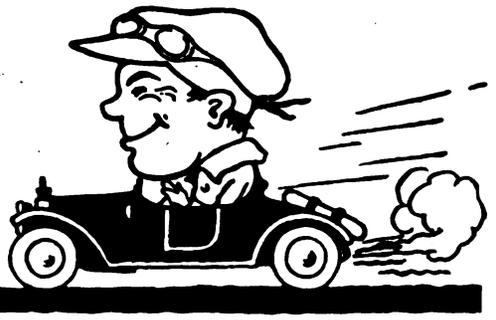
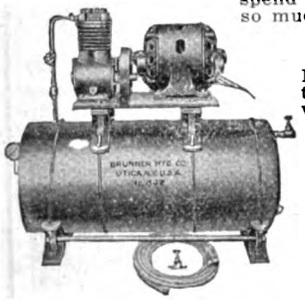
BRUNNER

He seeks the Garage that is Brunner-ized This Motorist who is Brunner-wised



Yes, Mr. Garageman, the Brunnerwise Motorist seeks the Brunner-equipped garage because he knows it is the one place where he can always depend on efficient and unfailing service such as he knows Brunner service to be.

He seeks the Brunnerized Garage because he knows that the garageman who installs Brunner Service has figured on something else besides the saving of a few dollars; he knows that the Brunnerwise Garageman has his patrons' welfare in mind at all times and that the rest of his equipment is usually of the same high standard as Brunner Equipment. The **Brunnerwise Motorist is a firm believer in reciprocity, too, Mr. Garageman.** He is a good spender and willing to spend his money with you for gasoline and supplies in return for Brunner Service, which means so much to him.



DO YOU BELIEVE IN ADVERTISING, MR. GARAGEMAN?

If so, we want you to read these "ads," because they are of vital interest to you. We want you to know about the Brunnerwise Motorist and the Brunner Sign which has proven such a valuable advertising medium for the garageman using Brunner Service.

To the Brunnerwise Motorist the Brunner Sign is sure sign of prompt and efficient service, not some times Mr. Garageman, but every time, day or night, day in and day out, year in and year out and that is why

THE BRUNNERWISE MOTORIST SEEKS THE BRUNNERIZED GARAGE

(CONTINUED ON NEXT PAGE)

WE USE A BRUNNER AIR COMPRESSOR
FREE AIR
FOR YOUR CONVENIENCE

COMPARE

SPRING NUT LOCKS

Stamped in a single piece from sheet steel, bent and tempered.

Slips easily on over the bolt, straddling a single thread.

Fits the widest variations in pitch of thread on bolts of same diameter.

Used on **any** style, design or manufacture of bolt and nut.

Tightened with a slight turn of the same wrench which is used to tighten nut against material.

Bottom disc or leg presses against nut; upper disc flattens down against bottom leg, bringing into play the powerful spring in the bend or hinge—**a double hold.**

Each leg draws deep into the valley of threads on opposite sides of bolt—**a double grip.**

Further tightening of nut against material is followed by lower leg of lock to the extent of the spring.

Uses least length of bolt.

Fits practically flush with end of bolt.

Instantly released with wrench used on nut.

Usable over and over again as well as nut and bolt.

WITH

Upper cut shows Spring Nut Lock applied loose on bolt. Lower cut shows Lock tightened against bolt.

Double Nuts or Any Other Nut Locking Device

No threads to be cut; no complicated parts to fit in making.

No crossing of threads or difficult fittings on under- or over-size bolts when used.

No assortment of locks needed each for a different thread.

No changing to unknown makes of bolt or nut.

No special tools needed in applying.

Cannot distort or jam thread of bolt.

No pawls to jam, break, rust or get out of order.

Possible shrinkage of the material bolted together cannot release lock.

Practically no extra length of bolt to pay for.

No nuts sticking out to complicate designs of machines or catch and get in the way.

No locking device to pick out when nut is to be taken off.

Then TEST Spring Nut Locks

for **Simplicity, Economy, Durability** and **Efficiency** on Automobiles, Trucks, Batteries, Accessories or wherever nuts must **Hold**

"They Sell Themselves"

Samples and Discounts on Application to

Spring Nut Lock Co., 651 Transportation Bldg., Chicago

Resta Rickenbacher Aitken

Indisputable Evidence

Of the 41 drivers that figured in the 1916 Trophy awards, 40 used

DIXON'S GRAPHITE Automobile LUBRICANTS

These drivers required and demanded the lubricants which would give their cars maximum speed, reliability and protection.

They chose Dixon's—naturally.

You owe your car the same intelligent care. The first step in this direction is to send for "Words of Wisdom" and Booklet 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Co.,

Established 1827

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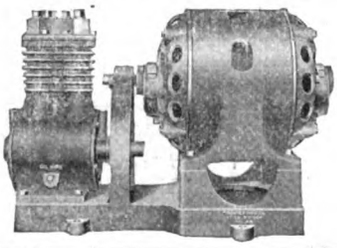
BRUNNER

He finds the garage that is Brunner-ized This Motorist who is Brunner-wised

Yes, Mr. Garageman, and when he finds the Brunnerized Garage he also finds prompt and efficient service at his disposal. He knows that when he sees the Brunner sign that he has found a garage that can give him real service.

He finds a good full length of Brunner "Resistoil" Air Hose, the kind that never leaks until the last particle of the outside covering is worn off by constant use, full to the brim with cool, pure air, and when he claps the automatic tire connection onto his tire valve he finds just what he always finds at the end of the Brunner air hose—all that he came for and plenty more. He finds the air pure and cool because the oily vapor which must pass into the tank by reason of the heat of compression and proper lubrication of the compressor, has condensed in the tank, and the pure, cool air separated from the oily vapor has passed out of the other end of the tank through the hose and into his tire.



DO YOU BELIEVE IN SIGNS, MR. GARAGEMAN ?

Well, the Brunnerwise Motorist does, and so does the Brunner wise Garageman, so if you want to do a little good advertising and do a larger and better business this spring you should cater to the Brunnerwise Motorist. There is always an exchange of pleasant courtesies and cash as well when

THE BRUNNERWISE MOTORIST FINDS THE BRUNNERIZED GARAGE

(CONTINUED ON NEXT PAGE.)

WE USE A BRUNNER AIR COMPRESSOR
FREE AIR
FOR YOUR CONVENIENCE

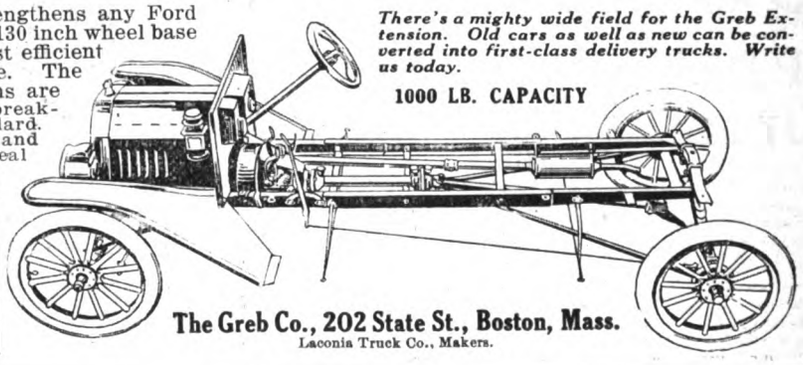
GREB EXTENSION

Lengthen Ford Cars—Big Business!

The Greb Extension lengthens any Ford Chassis to 115 inch or 130 inch wheel base—thus making the most efficient 1000-lb. truck buyable. The channel iron extensions are **riveted**—thus making an absolutely unbreakable junction. The universals are standard. Every part of highest grade material and workmanship—complete equipment. The ideal truck for wherever inexpensive delivery is required. Prices: $55 for all units to extend Ford Chassis to 115"; $60 for all units to extend Ford Chassis to 130". Write us today.

There's a mighty wide field for the Greb Extension. Old cars as well as new can be converted into first-class delivery trucks. Write us today.

1000 LB. CAPACITY

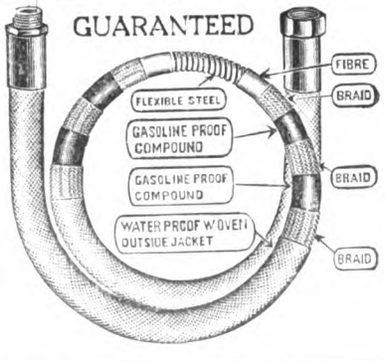


THE BEACH PROCESS BUSHING PRESS

Saves millions of dollars worth of bushings heretofore scrapped by garages and repair shops. Makes old worn bushings BETTER THAN NEW. Outfit consists of small press and set of swedges in all sizes from 7-16 to 13-16—takes practically all bushings in use. Price $125 f. o. b. factory.

The Greb Co., 202 State St., Boston, Mass.
Laconia Truck Co., Makers.

YOU WANT AND NEED EVERLASTING GASOLINE HOSE



Gasoline dissolves rubber and the best rubber hose made will last but a short time. Results—leaks, waste and repairs.

Everlasting Hose is made with a steel core covered with two plys of a gasoline proof compound, covered with a waterproof jacket. It is oil and dirt proof.

It is more flexible than rubber hose, it cannot break or leak and is guaranteed for one year.

There is no rubber to dissolve, to clog the gasoline line or carburetor. In use will not scratch nor mar the finish of the car.

It is made to fit any pump or tank. Sold in standard lengths 8, 10, 12, or 15 feet, but supplied in any length with couplings attached.

LIST PRICES ¾" **$1.00 a ft.—Coupling, hose or I. P. T. $1.50**
1¼" **$2.00 a ft.—Coupling, hose or I. P. T. $3.00**

Anti-drip nozzles furnished when desired.

CHICAGO TUBING AND BRAIDING CO.
224 No. Clinton St CHICAGO, ILL.

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BRUNNER

He meets the man who Brunner-ized The garage which he has patronized —

For when he meets you, Mr. Garageman, he vents his feelings undisguised, in a hearty handshake emphasized, by a smile of satisfaction which is a part of the daily routine of the Garageman who displays the Brunner sign.

And now, Mr. Garageman, to make a long story shorter, we might say that this whole thing simmers down to the question of whether or not you want the trade of the Brunnerwise Motorist. We have created him for you and a Brunner Air Compressor in your garage would place you in position to render him Brunner Service, while a Brunner Sign on your garage would serve as an introduction.

If you have not read Brunner's Garageman's Handbook on Compressed Air you should read it and get the facts concerning the garage air compressor situation today.

We will be very glad to send you this book along with our new No. 14 Catalogue and the name of the Brunner Jobber covering your town and we want you to know that our line is sold exclusively through the largest and most responsible jobbing houses in the country, whose binding guarantee along with ours goes to you with Brunner Equipment.

BRUNNER MANUFACTURING COMPANY

Main Office and Plant:
UTICA, N. Y.

Cincinnati Branch:
419 First Nat'l Bank Building CINCINNATI, OHIO

WITH PUMP AND MOTOR IN BASE
$105.00
WITHOUT PUMP AND MOTOR
$45.00

LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

FREE AIR SERVICE CURB STANDS

Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. Save Money.

LIPMAN AIR APPLIANCE CO.
199 Pleasant St., BELOIT, WIS.

50

60

The Pioneer Auto- -matic Gas Saver

More Mileage — More Power

AEROFRAM Gas Saver

The Simplest and Most Efficient of All Gas-Saving Devices—Effects a Notable Improvement in Engine Performance—Anybody Can Install It in Ten Minutes —For All Cars.

Absolutely Automatic—Nothing to Adjust

Dealers: The Aerofram actually does the work that more expensive gas-savers claim to do. When you offer it to your customer you do so with the certainty that he cannot duplicate its efficiency with any other device at ten times the price. It will positively add two to six miles per gallon—in many cases more. Hundreds of users have testified to this. Write for details. Liberal selling terms.

Price in Canada $1.50

$1 The Aerofram Co. $1
107 Massachusetts Avenue. Boston, Mass.

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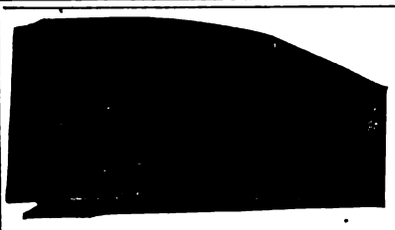


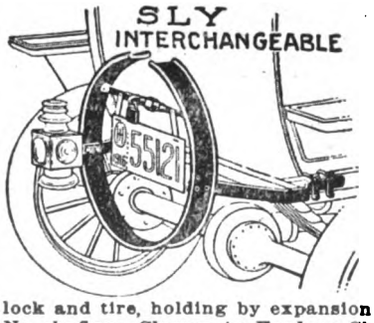
KENNEDY AUTO STORAGE COVERS

Furnish efficient and economical protection for cars in dead storage. They are made of heavy, durable paper, in standard sizes to fit any cars.

MADE ONLY BY

THE KENNEDY CAR LINER & BAG CO.
SHELBYVILLE, IND.

HESS-BRIGHT
BALL BEARINGS
"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
THE HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA, PENNSYLVANIA, U.S.A.



SLY Interchangeable and Cradle Type TIRE HOLDERS

Interchangeables quickly adjustable for all Ford and Chevrolet tires and demountable rims. Combines place for lamp, number plate lock and tire, holding by expansion grip on inside of tire. No chafing. Clamps to Ford or Chevrolet frame without drilling or bolting. At all jobbers, or write

New Era Spring & Specialty Co.
865-A Woodward Ave. Detroit, Mich.

THE MINIMUM IN DELIVERY COST

TON-A-FORD
(Trade Mark—Foreign Rights Reserved)

Extension Chassis, $345
F. O. B. RACINE

Combined with a Ford Chassis (new or old) makes a Powerful Ton-Truck, with Ton-and-a-Half capacity.

Dealers: Write for specifications and our agency proposition

TON-A-FORD TRUCK CO. 15th St., RACINE, WIS.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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We Manufacture and Distribute

Light Protectors—Eureka Valve Grinding Compound—Automobile Lamp Bulbs—Hold-fast Electrical Connectors and Fittings—Walden Tools and Wrenches—Ideal Hose Clamps—Clero Horns—Perfection Battery Connectors—Copper Gaskets—Shim Brass and Shims—Terminals—Storage Batteries—Ignition Assemblers for Ford Cars—American Standard Ignition Cables and Lighting Wires—Fuses—Dome Lamps—Sootless and Red Seal Spark Plugs.

Our Catalog and Prices should be consulted before buying—or the loss is yours—ask for them.

J. H. FAW, Inc.,

Main Office: 41 Warren Street, New York City.

Branch: Atlanta, Ga.

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

CAUTION

Do not confuse Scaife Copper-Brazed Tanks with the cheap Welded or Soft-Soldered Tanks made by others.

We Also Manufacture

SCAIFE GASOLINE STORAGE OUTFITS

Send for Catalogues.

WM. B. SCAIFE & SONS CO.,
First National Bank Bldg. PITTSBURGH, PA.

"NORMA" BALL BEARINGS

(Patented)

In this respect machines are like men—their worth lies in their capacity for bearing responsibilities. Upon the magneto, lighting generator and starting motor rests the responsibility for the satisfactory performance of a car or truck. And it is a significant fact that, almost without exception, those electrical accessories having the highest reputation for dependability, used upon cars of the highest repute, are insured against bearing trouble by means of "NORMA" Bearings. Which simply means that "NORMA" Bearings are known to be trust-worthy bearings—and their presence in a magneto or lighting generator or starting motor is an evidence of that quality which makes for long service.

Be Sure. See that Your Electrical Accessories Are "NORMA" Equipped.

THE NORMA COMPANY OF AMERICA

1790 BROADWAY NEW YORK

(Ball, Roller, Thrust, Combination Bearings.)

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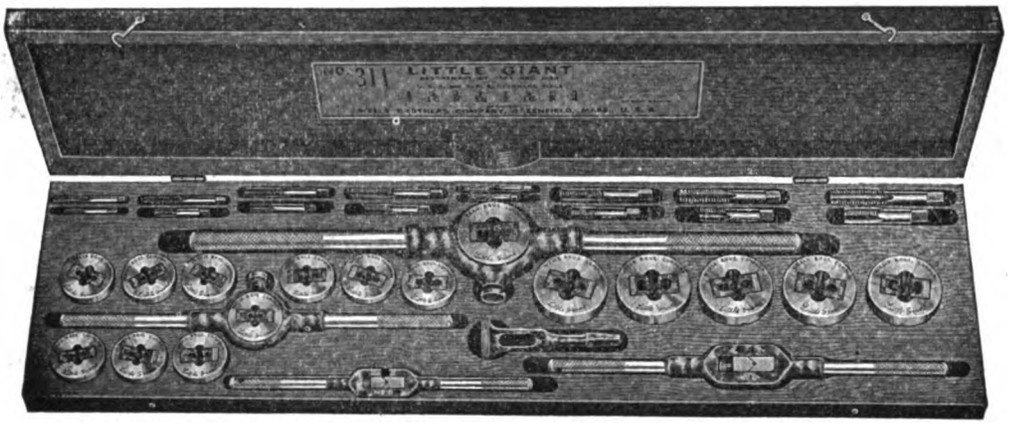
Little Giant Combination Screw Plates

Both United States and S. A. E. Standards



These assortments are particularly valuable in the automobile repair shop where a considerable amount of threading is done. Each die is contained in its own collet and is adjusted to size. There is also a Bit Brace Die Holder for cleaning up battered threads in hard-to-get-at-places.

Every need of the manufacturer, the garage and repair man, or the car owner who makes his own repairs, for tap and die assortments can be supplied from our big line.

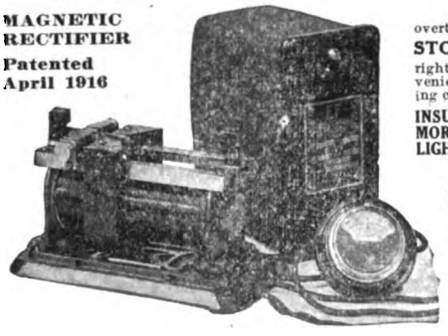
Send to-day for the circulars "Tools for the Automobile" "First aid in the up-keep of the Automobile."

Greenfield Tap and Die Corporation, Greenfield, Mass.

New York Chicago Philadelphia Galt, Ontario

F-F BATTERY BOOSTER

MAGNETIC RECTIFIER
Patented April 1916



CHARGES
overtasked starting and lighting
STORAGE BATTERIES
right in the car from any convenient 110 volt 60 cycle alternating current lamp socket.

INSURING A POSITIVE START, MORE POWER, BRILLIANT LIGHTS and INCREASED LIFE OF BATTERY

A a minimum of trouble and expense.

$15 Complete
f. o. b. Cleveland

Get Bulletin No. 8

THE FRANCE MANUFACTURING CO., Cleveland, Ohio
Jobbers and Dealers Throughout the United States and Canada

Time Savers

For Charging Storage Batteries

HOOK them up with Universal Test Clips. Don't stop to clean dirty terminals—the teeth bite through the corrosion and make a good contact.

Made of steel—lead plated—may be used over and over again.

No. 21-A—1½" spread of jaws.

Sample mailed postpaid for 15c in stamps.

Single Lots, Each 20c Lots of 10, Each 15c Lots of 100, Each 12 1-2c

R. S. MUELLER & CO., 431 High Ave., S. E., Cleveland, Ohio.

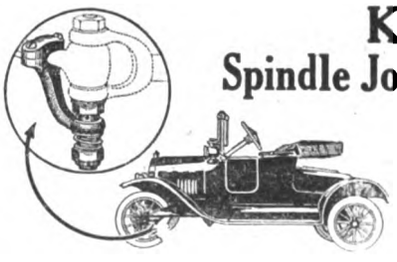
WE REPAIR

BUY, SELL AND EXCHANGE

Coils, Magnetos, Starting and Lighting Systems, High Tension Outfits and Motors

We Repair any Kind of an Electrical Heating Device

MABEY ELECTRIC & MFG. CO.
968 Fort Wayne Ave., Indianapolis, Ind.



KING
Spindle Joint Anti-Rattler
Ford Cars
$1.00 PER PAIR

Silences the spindles and stops the dangerous wear. It stops the hammering, keeps out the dirt, reduces wear and saves repair bills. It is a simple device and can be attached by any one. After that it needs no attention.

King Manufacturing Company, Inc.
305 Washington Street, Brookline, Mass.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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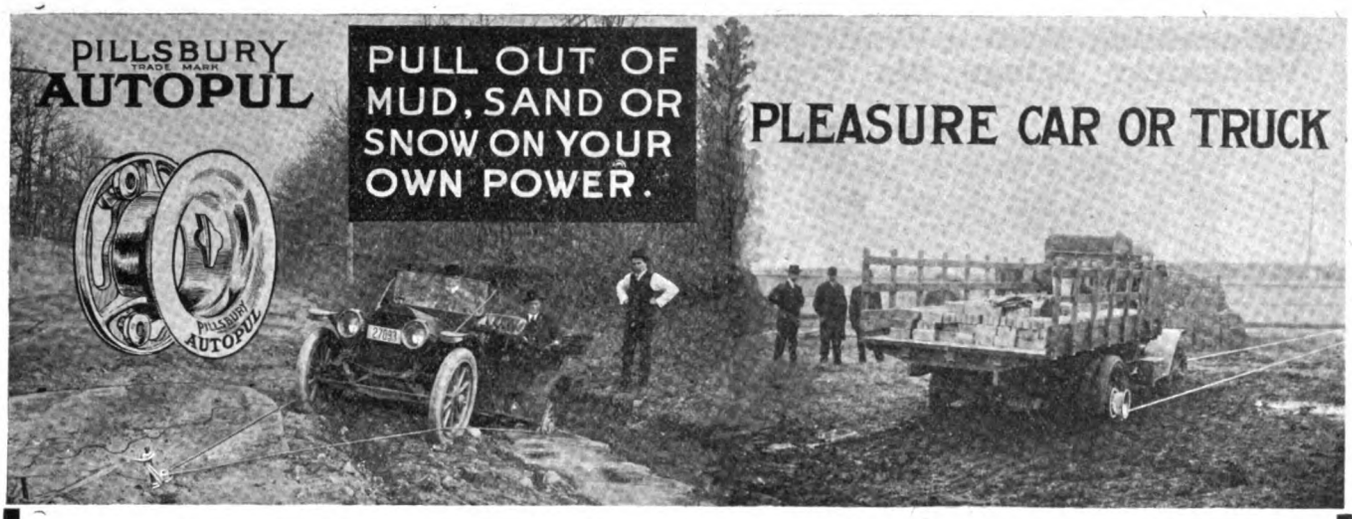

All Highways are Passable—With an Autopul

An equipment, either permanent or quickly fitted to any car or truck, with which a ditched or bogged or tractionless vehicle can be drawn to a solid surface.
The outfit can be carried constantly, requires but small space and is very light. Machines can be drawn forward or back as is necessary by their own power.

LIST PRICE, COMPLETE FITTINGS

Automobile Size, Japanned	$8
Automobile Size, Nickeled	$13
Truck Size	$8 to $35

Indispensable for any truck, an ideal touring equipment. Pillsbury Autopul is a practical utility and an economy. It consists of two winding drums, two special cable hooks and locking bolts and nuts. Stakes and cable furnished as extras, the cable or rope in lengths to meet any requirement.

HUBPUL—For Ford and model 490 Chevrolet cars—a combination Hub-Cap, Wheel Puller and Auto Capstan, consisting of two hub drums, two spoke hooks and wheel puller cap screw.

Complete Set, Japanned	$4
Complete Set, Nickeled	$6

All quotations f. o. b. Minneapolis, Minn.

DEALERS AND JOBBERS: We have a big sales proposition for you. Write for it today.

PILLSBURY MANUFACTURING COMPANY, Minneapolis, Minn.

LISTEN!

You Dealers and *Repairmen* Who Are Particular About The Quality Of The Goods You Sell

WHEN you sell a Harvey spring there are never any kicks or "comebacks," because Harvey springs give absolute satisfaction to the car owner. They have no bolt hole at center—no weak spots anywhere—and are guaranteed from end to end against all defects. If a spring proves defective at any point, we will replace it.

We are partners with every Harvey dealer. Not silent partners, either—we're spending thousands of dollars this year to post car owners in every section of the United States on the merits of Harvey springs—urging them to look for a Harvey dealer when in need of replacements.

It will pay you—big—to connect with this live-wire advertising. Let people know you handle Harvey springs if you expect to get your full share of spring replacement business—and profits.

Harvey springs are made for over 600 of the leading makes and models of cars and each spring is an exact duplicate of the spring it is intended to replace—fits with an accuracy that will surprise you. Write us at once for name of your nearest jobber.

Harvey RACINE

SPRINGS DO NOT BREAK

FREE

Write for the Harvey Spring Book which contains a complete list of springs for all the leading makes and models of cars—gives sizes, weights, measurements, prices, etc., and prevents mistakes in ordering replacements. We mail it free.

HARVEY SPRING COMPANY
851 Seventeenth Street, RACINE, WISCONSIN

7

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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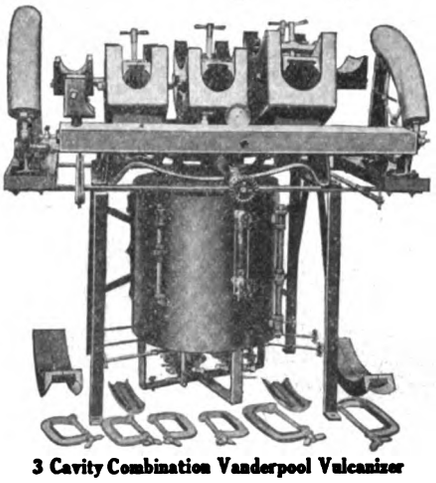
Vulcanizing With a Vanderpool Vulcanizer Brings Big Profits



3 Cavity Combination Vanderpool Vulcanizer

Here is an exceptional opportunity for Garages as well as Vulcanizing Companies to secure a vulcanizer that will turn out high-grade work at a small cost. The fuel saved alone, will pay for the machine in a short time—then you will "cash in" on your investment. This plant, the Vanderpool Vulcanizer, is meeting with enthusiastic approval of hundreds of satisfied users all over the country. Unsolicited testimonials from the various companies now using the "Vanderpool" testify to the dependability, efficiency and economy of this "Vulcanizing Wonder." One man writes that the first month's profits paid for the plant. No experience needed—we teach you how. It occupies very little floor space, and "once bought, you will never have to buy again."

Send in this ad with your name and we will mail catalogue and prices.

VANDERPOOL COMPANY

Box 63 **SPRINGFIELD, OHIO**

SOLD ONLY TO THE TRADE

THE MARTIN LINE

Tire Covers, Radiator Robes, Inner Tube Cases, Water Buckets, Engine Robes

All jobbers and dealers should send a sample order. Do it before you stock your 1917 line. **Quality, prices and discounts are not met by any other manufacturer.**

No catalogue is complete unless the Martin Line is shown and listed.

Send today for latest circulars and discount sheets.

THE MARTIN MANUFACTURING CO.

LANCASTER, OHIO

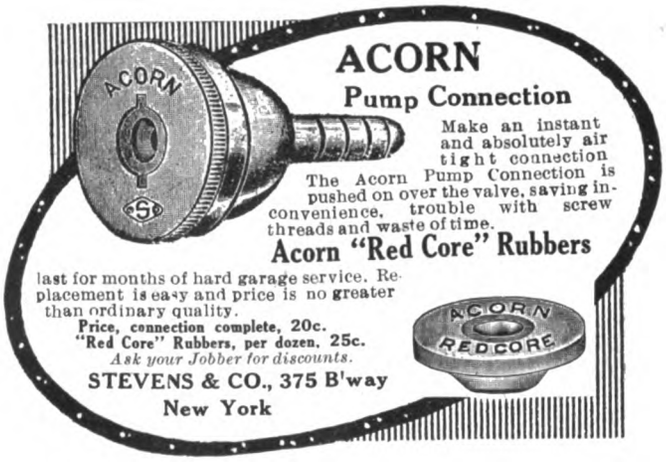
Automobile Mailing Lists 1916

28,108	Auto Dealers, all kinds, U. S. $40, or $2.50 per M by states.
1,187	Auto Dealers, all kinds, Canada, list $4.
6,122	Ford Dealers, price $17.50, or $3 per M by states.
285	Ford Dealers, Canada, $1.50.
28,483	Auto Garages, price $40, or $2.50 per M by states
29,806	Auto Repairs, price $40, or $2.50 per M by states.
33,171	Auto Supplies, price $40, or $2.50 per M by states.
46,468	Dealers, Garages, Supplies and Repairs, combined without duplication, $65, or $2.50 per M for states as wanted.
240	Auto Supply Jobbers, price $4 for the list.
4,092	Auto Tire Dealers, price $3 per M.
3,404,150	Auto Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.
642,475	Ford Owners, in lots of 10 M, $2.00 per M; larger lots cheaper.

Write for particulars of any list you want.

A. F. WILLIAMS, Manager,

Phone Franklin 1182. 164 West Adams St., CHICAGO



ACORN Pump Connection

Make an instant and absolutely air tight connection

The Acorn Pump Connection is pushed on over the valve, saving inconvenience, trouble with screw threads and waste of time.

Acorn "Red Core" Rubbers

last for months of hard garage service. Replacement is easy and price is no greater than ordinary quality.

Price, connection complete, 20c.
"Red Core" Rubbers, per dozen, 25c.
Ask your Jobber for discounts.

STEVENS & CO., 375 B'way
New York

WATERHOUSE

WELDING OUTFITS $42

The Standard Welding Equipment of the Nation

Before you buy any welding outfit learn about the Waterhouse. In any shop it will bring business and big profits.

Write for our welding instruction book, free at request.

WATERHOUSE WELDING CO.

3 Pelham Street, Boston, Mass.

Jointless Piston Rings

There are no substitutes for Jointless Piston Rings. The Jointless affords every quality found in other rings and assures to all users a permanent, gas tight ring, more power, less carbon, increased mileage, less gasoline and lubricating oil.

The Jointless eliminates all usual piston ring troubles. It is finely constructed and its efficiency makes the Jointless a money making and saving proposition for any owner of a pleasure car or truck.

List Price $1.00

Sold by all Jobbers and Dealers.

DETROIT PISTON RING CO.

53 Richmond Ave. **Detroit, Mich.**

Trade Subscription Offer

Including three motoring magazines—one gives over to the pleasure car field—another to commercial vehicles and the third to industrial interests. Each magazine distinct.

The lowest rate ever made for leading motoring papers. Write for details.

ACCESSORY & GARAGE JOURNAL

Times Building **Pawtucket, R. I.**

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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You Ought to Know Why—

Motorists have learned that they get full gallons of pure, clean "gas" and get it quick from

Wayne
Honest Measure Pumps

They patronize Wayne-equipped garages in preference to all others.
Wise garage men are realizing this and are rapidly installing Wayne outfits.
Here are a few of the many exclusive features that account for WAYNE popularity:

CONTINUOUS STROKES: No backward cranking is required.
SPEED: THE WAYNE MONARCH pictured here throws 5 gallons in 15 seconds.
DISCHARGE REGISTER: Big clock dial shows customers plainly the number of gallons discharged.
PERFECT METER: Positive drive, operated by cog rack, absolutely sure to record every drop of gasoline that passes through pump.

HOUSING: Circular steel, unbreakable, weather proof. Doors telescope, require no more room open than closed, are counterbalanced, automatically operate light dome at top.
VALVES, CASTINGS: All valves are solid brass. Castings, gray iron and all coming in contact with "gas" are galvanized. Suction and discharge pipes are galvanized steel. Complete rust-proof line for gasoline.

WRITE NOW for interesting literature describing these and other Wayne features in detail. A postcard will bring you particulars

WAYNE OIL TANK & PUMP CO., 510 Canal Street FT. WAYNE, INDIANA

BOWSER
ESTABLISHED 1885

Will save ALL waste and add to your profit

If you operate your garage without these two outfits you are not only losing part of your profits on the gas and oil you sell, but you're letting the biggest share of the auto trade drive past without even stopping.

If you are using one outfit without the other it's about like buying a suit of clothes without the pants—your equipment is not complete.

You can easily pay for both of these curb money makers with what it costs you now to do without them.

S. F. Bowser & Co., Inc.
Fort Wayne Ind.
Sales Offices in all Centers
Representatives Everywhere

G-20

Demountable at $1.00 A Wheel

Service Stations and Garage Men Don't Miss This!

Be prepared to supply your customers with the new Holland Lightning Demountable Wheel Outfit. This latest invention makes a customer a friend of yours for life. You save him time—you save him money—you help him get every moment's pleasure out of his car. Get in on this proposition. It's the quickest and best system on the market. Once installed, wheel changes can be made by merely loosening six nuts. Only three minutes and so easily done that it is simply fun.

The HOLLAND Lightning Demountable Wheel OUTFIT
PATENT APPLIED FOR

Makes Fords, Maxwells, 490 Chevrolets and Cars Using 28 x 3, 30 x 3, and 30 x 3½ Tires Demountable at $1.00 a Wheel.

Only a spare wheel required. Once installed, the old wheel comes off and the spare one goes on in a jiffy. Never any need to run on flat tires—no need to buy different tires—the spare wheel fits all around. Easier to change than a demountable rim and no soiled hands.

Money-Back Guarantee
Full Instruction for Installing and Free Wrench With Each Outfit.

Be first in your locality to get this proposition. Customer's price only $4.00 east of the Rockies, $4.50 west of the Rockies, for complete outfit. Dealer sells the spare wheel. Liberal arrangements being made with dealers who write quick. This offer is open to you NOW. Investigate.

Dealers Send This Coupon NOW attached to your letter-head

—HOLLAND DEMOUNTABLE WHEEL CO.
DEPT. 9, HOLLAND, MICH.

GENTLEMEN:—Please send me your liberal proposition on the Holland Lightning Demountable Wheel Outfit.

Name . . . . . .

Address . . . . . .

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MOSCO

FLOATING PLUNGER WHEEL PULLER

Makes a "Frozen" or "Stuck" wheel come off easily. Strike the plunger, turn the screw, strike again and the wheel comes off without injury to hub-threads, spokes or axle.

Car	Model	W. P. No.
Abbott	6-44	16
Apperson	6-17, 8-17	20
Auburn	6-39, 6-44	5
Briscoe	4-24	16
Buick	10, 24, 25, 26, 27, 32, 33, 34, 35, 36, B24, B25, C24, C25	4
Buick	16, 17, 19, 21, 28, 29, 30, 31, 41, B36, B37, B38, C36, C37	5
Buick	D36	14
Buick	D44, D45, D46, D47	20
Case	4-T	4
Chalmers	6-30, 6-30-7, 6-40, 7-22	18
Chandler	1916-17	4
Chevrolet	H2, H3, H4, F5, D	4
Chevrolet	4-90	2
Daniels	A 1916 and early 1917	4
Daniels	late 1917	5
Davis	6-H	5
Dort	6, 9	
Empire	30, 31, 40, 45	4
Empire	60-R	20
Ford	All models	2
Franklin	Series 4 to 9	14
Hudson	20, 33, 1910-11, 33, 1912	4
Hudson	H, G, 8, 15-40, 16-40	18
Interstate	1917	4
Jeffery	471, 472, 661, 671	24
Jordan	60	18

MOSCO

TIMER FOR FORD CAR

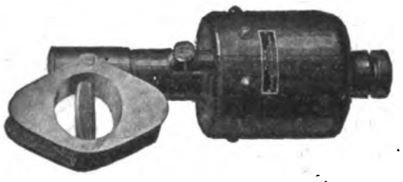
Extra heavy pressed steel shell, aluminum finish. Insulating ring of gray bone fibre.
Terminals insulated all the way through. One-hand, self-closing oiler. Pressed steel arm and compression spring on brush assembly. Brush assembly can be had separate. Interesting prices.

Car	Model	W. P. No.
Lexington	6-0	20
Liberty	10A	18
Maxwell	All cars No. 52001 to 54000	6
Maxwell	" " " 54001 to 84350	7
Maxwell	" " " 84351 and up	8
Moline Knight	40C, 50C	5
Oakland	40, 42, 48, 49	5
Oakland	30, 35, 36, 37, 38	4
Oakland	32	6
Oakland	32B, 34	14
Oldsmobile	42, 43	22
Oldsmobile	44	20
Overland	60F, 60T, 69R, 69RE, 69F, 69T, 69TE, 79R, 79RE, 79T, 79TE, 80RE, 80TE, 81RE, 81TE, 83T, 83R, 83del, 85-4, 85-6	3
Overland	75 and 90 except wire wheels	6
Paige	4-36, 6-46, 6-36, 6-38	16
Peerless	54, 55, 56	18
Pierce-Arrow	36, 38	24
Premier	6-B	18
Reo	R, S, ST, J, 1912-13-14	22
Reo	J, F, M, N, R, S, 1915-16-17 Special	12
Saxon	S2, S4	3
Saxon	BR, 14R, B5R, R all models	4
Velie	15, 27	18
Velie	22, 28	20

New Models Continually Being Added. *List of Models and Prices on Application.*

MOTOR SPECIALTIES CO., *MANUFACTURERS* **WALTHAM, MASS.**

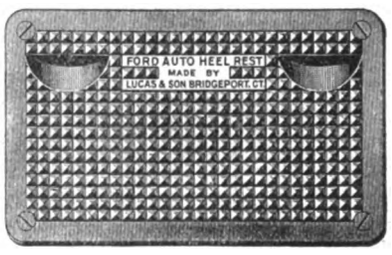
PIERCE GOVERNORS



Can be easily and quickly installed, and will provide positive and absolute speed control for any type of automobile, motor truck, tractor, marine engine, or stationary engine.

Recommended and used by all the prominent manufacturers.

PIERCE GOVERNOR CO., Anderson, Ind.



HEEL REST For FORD Cars

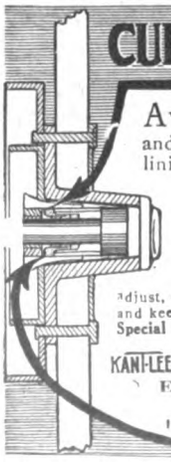
Size 5x7 ins., ⅛ in. thick, made of frosted aluminum, with ⅜ in. polished band. Will protect rubber mats of any Ford car. Locates heel for both clutch and brake pedals (push reverse pedal with heel, it works fine). Pyramids and raised letters cast solid—cannot flatten or wear through—cannot rust or tarnish; are easily kept clean.

Is a neat, useful foot rest—a convenience and an economy. Sold by all dealers for $1 each or sent postpaid on receipt of price.
We make the Auto Heel Rest used extensively on other cars for the same purpose.

DEALERS: Send for circular and trade discount. Made only by

BRIDGEPORT: J. L. Lucas & Son CONNECTICUT

CURE LEAKY REAR AXLES



Avoid grease and dirt on hubs and wheels, oil-rotted tires, oil-soaked brake linings and dry-bearings on your FORD.

KANT-LEEK WASHERS For Fords

are the positive and inexpensive remedy. A set of four makes grease "stay put." Simple, nothing to adjust, easily applied. They'll end rear-axle bearing troubles and keep repair bills down.

Special Discount for Dealers and Jobbers. **Per Set, 90c.**

KANT-LEEK MFG. CO., Saint Louis, Missouri.
Exclusive Selling Agent, H. BECKER.
Room 306 Monroe Bldg.,
104 So. Michigan Ave., Chicago.

Do Business by Mail

It's profitable, with accurate lists of prospects. Our catalogue contains vital information on Mail Advertising. Also prices and quantity on 6,000 national mailing lists, 99% guaranteed. Such as:

War Material Mfrs.	Wealthy Men	Fly Paper Mfrs.
Cheese Box Mfrs.	Ice Mfrs.	Foundries
Shoe Retailers	Doctors	Farmers
Auto Owners	Axle Grease Mfrs.	Fish Hook Mfrs.

Write for this valuable reference book. Also prices and samples of Fac-simile Letters.

Have us write or revise your Sales Letters.

Ross-Gould, 1015K Olive Street, St. Louis

Ross-Gould Mailing Lists St. Louis

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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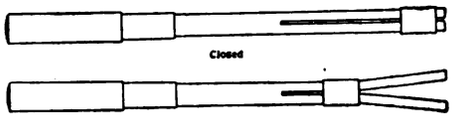
Jiffy Bushing Extractor for FORDS



(Patented)

Removes

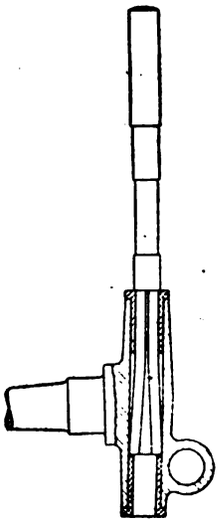
Steering Knuckle
Spindle Arm
Spindle
} BUSHINGS in a JIFFY

Made of Tool Steel and nicely finished.

Indispensable to the repairman or the owner who does his own work.

When removing Steering Knuckle Bushings it is not necessary to remove wheel.

Pays for itself in a few minutes.



Light Weight Piston for FORDS

Weight 1 Lb. Less Than Standard Ford

Manufactured to the Limit of 2 Ounces Variation in Weight

A PISTON AS FINELY MADE AS THOSE USED IN THE HIGHEST PRICE CARS

A reduction of 4 lbs. weight on reciprocating parts saves a tremendous percent of crankshaft and wrist pin bearing wear.

These pistons are cast on a moulding machine of special design insuring concentricity in casting to eliminate variable strains.

Metal is composed of elements insuring perfect bearing surfaces, toughness and durability.

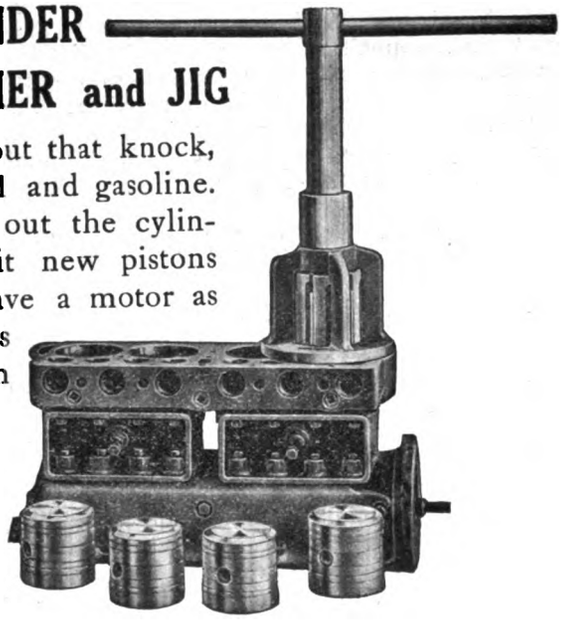
Centered on a special fixture that grips the casting on the inside walls, producing a structure of uniform thickness.

The groove that supplies oil to the wrist pin is more than ordinarily deep to prevent filling up.

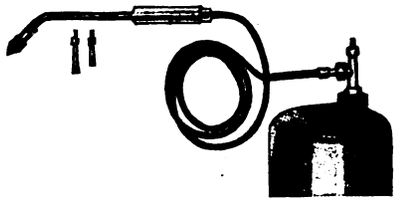
Pin bosses are drilled top and bottom for additional oiling.

CYLINDER REAMER and JIG

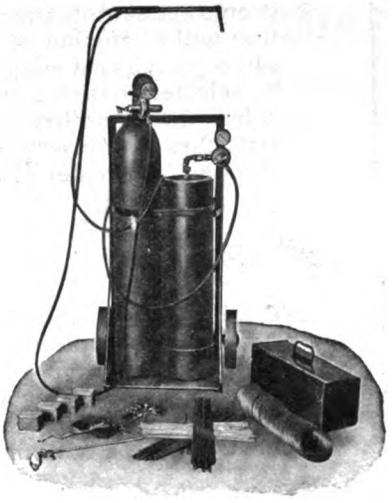
Take out that knock, save oil and gasoline. Clean out the cylinders, fit new pistons and have a motor as good as when new.



DAVIS PATENT

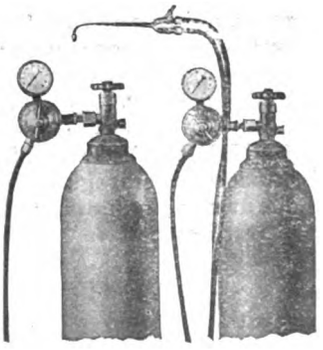


Acetylene Brazing and Soldering Outfit. One of handiest tools you could have.



Style A Welding and Carbon Removing Outfit with Truck.

Oxy-Acetylene Equipment Made in Several Different Units for Welding and Steel Cutting.



Oxy-Hydrogen Lead Burning Outfit.

Recommended particularly for storage battery work.

THE G. H. DYER COMPANY, - - - Cambridge, Mass.

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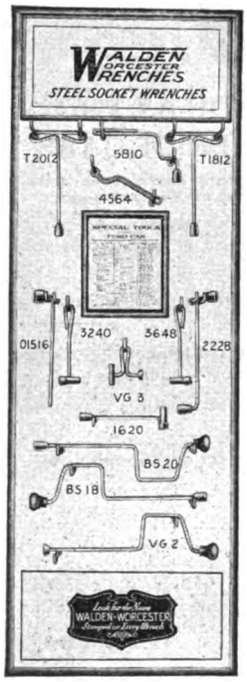
Silent Salesmanship

AN ACTIVE and producing Salesman is the man that knows how to reach real buyers; tells them of the quality of his lines and displays his goods.



He is always on his job and is on the producing end. He establishes his worth by the business that he does and becomes an asset to the concern, as he helps to swell the dividends.

Among jobbers and dealers the ***Walden-Worcester Wrench Silent Salesman Way*** is just as affective. Always working, never tires or stops producing. There is no cost attached to it and there is no overhead to cut the profits. It talks to thousands of buyers every day and displays the most complete lines of wrenches ever sold by the trade.

All Wrenches Needed or Desirable for Use On the Ford Car

A striking example, and one of many of the Walden-Worcester Wrench Silent Salesman Display Boards, is the No. 78, showing special wrenches for use on the Ford car. It makes a handsome and attractive display and it is an ornament in any place of business. On this board there is a wrench that will fit any nut or bolt from any position or angle on the Ford. They can be purchased singly or from the display. A complete combination can be selected that will meet every need of the owner or repairer. The cost is less than for other quality wrenches. They will last longer than other wrenches in any service and are guaranteed in every way and sold under the Walden-Worcester ***World Known Trade-Mark.***

Wrenches From Stock to Meet All Demands For Any Work

The illustration, showing No. 180 display and stock set, gives but a general idea of the complete line of Walden-Worcester wrenches on this board. There are three types and ten sizes of each type, and six wrenches of each size and type, making a total of 180 offset and tee-handled wrenches. From this stock a wrench can be selected that will fit any need or a general combination can be built up that will meet every service requirement.

Owners and repairers are demanding special dependable quick working time and labor saving tools. Makeshift wrenches cost too much in lost time and labor. Walden-Worcester wrenches cost no more; will last for years, and there is just the tool for every job or a combination set that will meet every wrench requirement in the largest shop.

Free To Walden-Worcester Dealers

JOBBERS AND DEALERS: We want you to know all about our special handsome storage cabinets; how they would fit in your business; our silent salesman display boards; our selling co-operation; the class of selling literature that we supply, and other facts that you should know.

Write today for latest catalogue

WALDEN-WORCESTER
INCORPORATED
WORCESTER, MASS.

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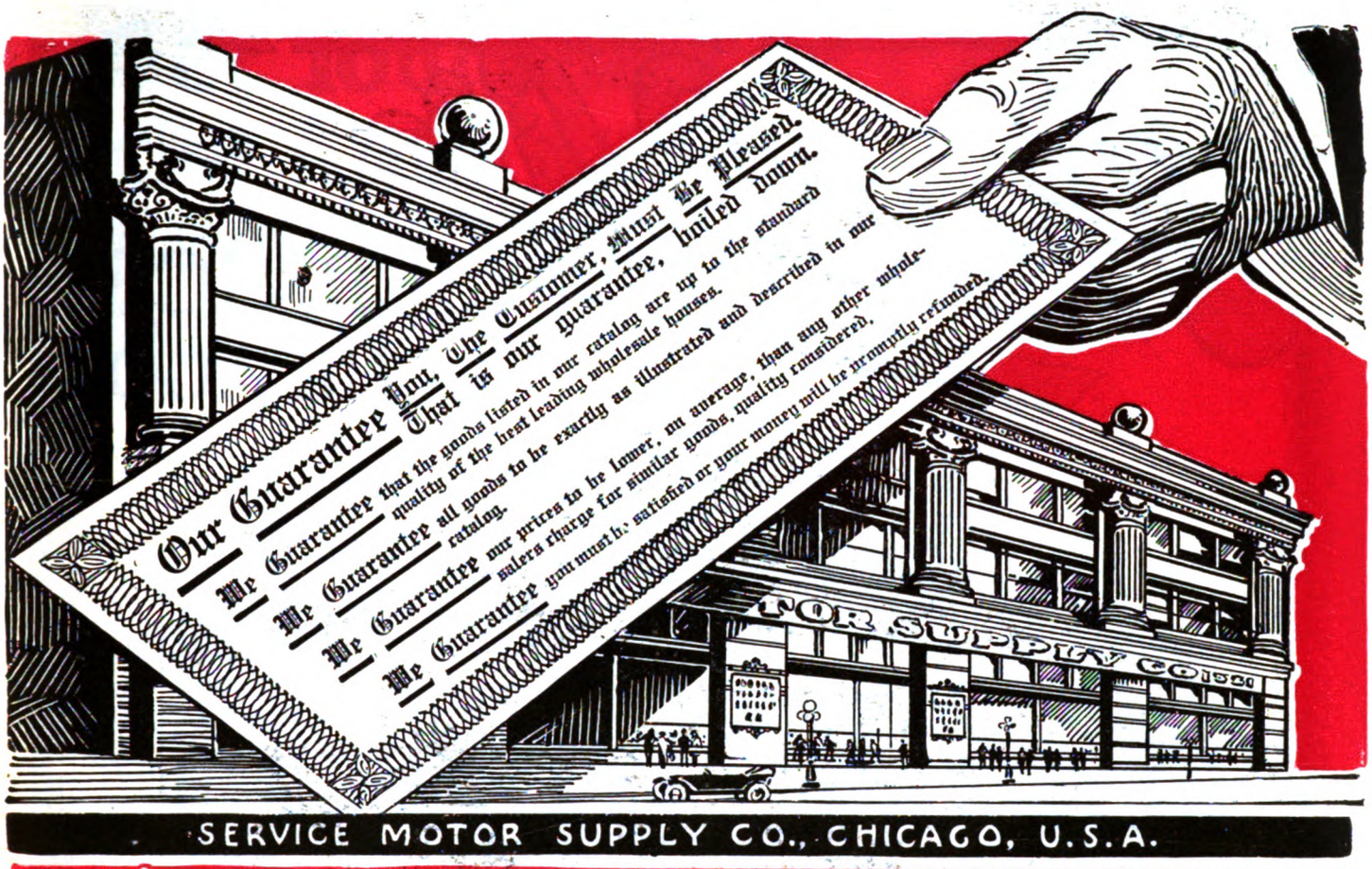

SERVICE MOTOR SUPPLY CO., CHICAGO, U.S.A.

The Proof!

When anything succeeds, the success is evident—there is no questioning that. When we adopted *"the Square Deal in Business"* as our platform, we put this platform into cold type—in the shape of the *GUARANTEE* we show above. And from then on, every single transaction—every sale we made, was made under the terms of this *GUARANTEE*.

Has it paid? ***Yes,*** it has paid us a thousand-fold—***and here is the PROOF***—

When we started business in a small way, we had principally as our capital—"hopes" and the firm determination to treat our customers ***RIGHT.*** In those early days 1000 orders per month looked like big business; made us feel proud and encouraged.

Has it paid? ***Yes,*** again—and this is how it has paid—

INSTEAD OF 1000 ORDERS A MONTH, WE NOW GET 34,000

TO ALL DEALERS

We pledge fair treatment, biggest values, and the chance to increase profits.

WE SELL WHOLESALE ONLY

Only bona fide dealers and garagemen who buy to resell can buy goods from us. Our monthly catalogue, ***"SNAPS"*** is mailed only to bona fide dealers. If you have not received a copy of ***"SNAPS"***, send for it! 34,000 dealers all over the country call us their ***"CHICAGO PARTNER."*** Why don't you?

Copy of ***"SNAPS"*** will be mailed you free if you are a bona fide dealer. Write for a copy on your letterhead.

SERVICE MOTOR SUPPLY Co. 1523-25-27-29-31 Michigan Blvd. CHICAGO, U.S.A.

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Prest-O-Lite SERVICE in CHICAGO

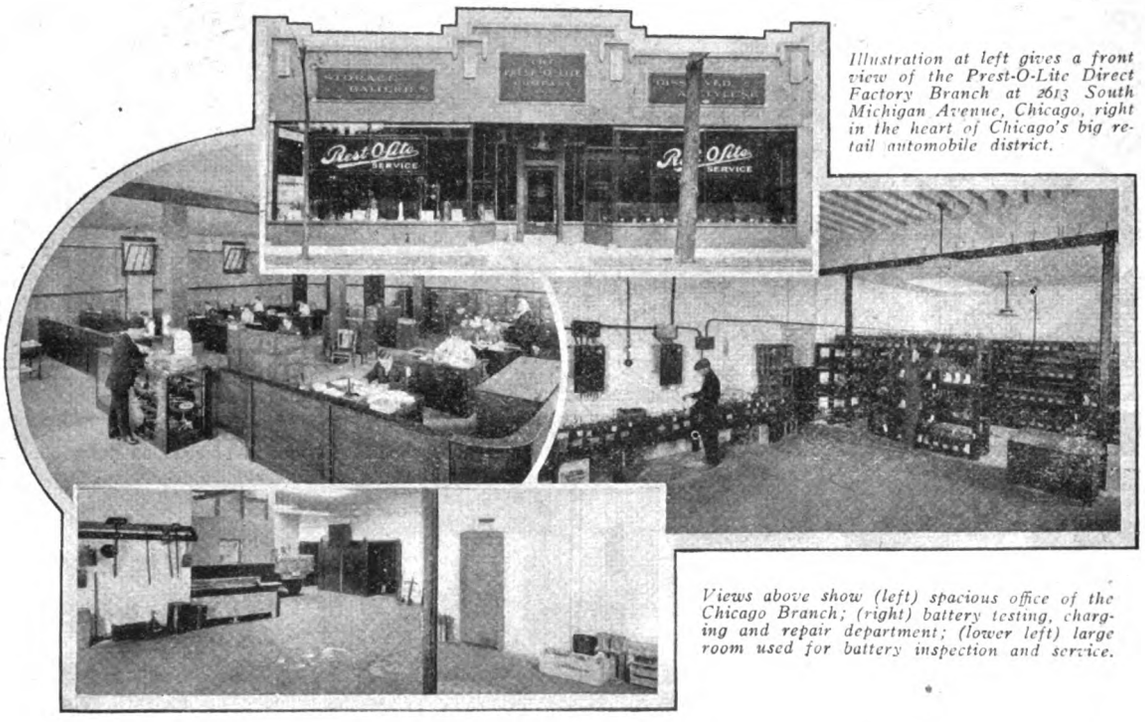

Illustration at left gives a front view of the Prest-O-Lite Direct Factory Branch at 2613 South Michigan Avenue, Chicago, right in the heart of Chicago's big retail automobile district.

Views above show (left) spacious office of the Chicago Branch; (right) battery testing, charging and repair department; (lower left) large room used for battery inspection and service.

CHICAGO, the second largest city in America, together with its adjoining territory, which is so closely dotted with towns and cities throbbing with industrial activity, demands SERVICE of the highest order.

Helping in a big way to supply this need in Chicago, is a large Prest-O-Lite Factory Branch with ample facilities and an expert organization which is ready and willing at all times to handle the storage battery problem of the automobile owners, dealers, distributors and manufacturers in its territory.

This direct factory branch serves the double purpose of a sale depot and service headquarters for the Prest-O-Lite Storage Battery; insuring prompt, expert *factory service* to all.

Throughout the United States and Canada we maintain a strong chain of Direct Factory Branches—each in a center of commercial importance. Closely linked to this chain of branches are the thousands of special Prest-O-Lite Service Stations in other cities and towns, fully providing for every battery need of the motorist, no matter where he may be.

The Prest-O-Lite dealer proposition is bringing more profit to dealers today than ever before. Write us for interesting details.

The Prest-O-Lite Co., Inc., U.S. Main Office and Factory, 309 Speedway, Indianapolis Indiana
Canadian General Office, Toronto, Ontario, Canada

The Prest-O-Lite battery is a better battery--backed by a better service

Digitized by Google

Get Your Share of the Auto Spring Replacement Business

When a spring breaks your customer doesn't want another "just like it"—he wants one that ***will not*** break, and he'll be more than pleased to have you tell him about the durability and efficiency of Harvey Springs.

Why not recommend and sell these good springs and get your full share of replacement business—and profit—instead of letting it go to the car manufacturer?

The demand for Harvey Springs is growing by leaps and bounds because the automobile public is rapidly learning about the many good qualities of Harvey Springs.

Our advertising plans for 1917 are bigger and more comprehensive than ever. The Dealer, Garageman and Repairman who handles Harvey Springs will have the benefit of all the sales-making power of an advertising campaign that practically reaches every car owner in the country.

FREE The Harvey Spring Book contains a complete list of springs for over 600 of the leading makes and models of cars—gives sizes, weights, measurements, prices, etc., and is an invaluable aid in ordering replacements. Write for a copy today. We mail it free.

Harvey RACINE

SPRINGS DO NOT BREAK—THEY ARE GUARANTEED FROM END TO END AGAINST ALL DEFECTS

The HARVEY SPRING CO., 851 17th Street RACINE - WIS.

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71% Increased Gasoline Mileage

Even Better Than A. A. A. Tests That Showed 42% to 54% Increase

Read This Affidavit:

Results of gasoline mileage test made at Omaha, Nebraska, March 1st, 1917, under the following conditions:

Car used was a Ford roadster with standard equipment, top and windshield up, and carrying three passengers, namely, Joseph P. Woodlock, Herman Beal and R. H. Findley.

First, main fuel tank was disconnected and a two-quart auxiliary tank was attached to windshield and connected with carburetor. This auxiliary tank was filled with gasoline and car run until fuel was entirely consumed, and 6.6 miles were secured, or at the rate of 13.2 miles per gallon. No stops were made.

Second, the exhaust and intake manifolds, which are Ford standard equipment, were removed and the Wilmo combination one-piece manifold was installed. The carburetor was readjusted to meet the new conditions, the gasoline tank filled with fuel and car was driven at same rate of speed as in former test with standard equipment, namely, 20 miles per hour, over same course and under like conditions, carrying same passengers. One complete stop was necessary owing to traffic congestion and 11.3 miles were secured, or at the rate of 22.6 miles to the gallon, or an increase in mileage of 71 per cent.

The above test was witnessed and is hereby attested to by the undersigned.

Herman Beal
Asst. Engineer, City of Omaha

Ross H. Chamberlain
Asst. Sports Editor, Omaha World-Herald

P. H. Patton

R. H. Findley
Supt Track and Roadway, O. & C. B. St. Ry. Co.

Raymond A. Pagan
Feature-Advertising, The Omaha Bee

Asst. Secretary, Omaha Auto Club

Jno. H. Clarke, jr.
Publicity, Omaha Daily Tribune

Subscribed and sworn to before me this 3rd day of March, 1917.

L. R. Wilmo
Notary Public

The Wilmo Manifold utilizes the heat of the exhaust to completely vaporize the incoming mixture.

Gasoline mileage wonderfully increased. Carbon troubles practically eliminated.

Attached in a few minutes with an ordinary monkey-wrench. No holes to bore.

Retail prices, $7.50 (Ford size) to $15, depending on make of car.

Well advertised. Sold under the absolute money-back guarantee of the makers.

Dealers: Write for Sales Proposition and Official A. A. A. Tests.

THE WHITTIER COMPANY, First National Bank Building, Chicago

Wilmo Manifold

Digitized by Google

more money for garages

How often are you called on to locate and correct trouble in Electrical Starting and Lighting Equipment? You are bound to have more and more of such calls, especially if you earn a reputation for knowing the electrical side of an automobile and handling it right.

There is money in Electrical Installations, Repairs, Adjustments, Renewals, etc. Some of the most wide-awake Garage Men have found it out. This year, more money than ever before will be made that way, because there will be more electrical work than ever for the man who knows how.

Guesswork won't do. Every time you guess wrong, you are likely to make yourself a peck of trouble and lose a customer in the bargain. What you need, and need right now before you find yourself losing opportunities to make money, is a

Weston

Model 280
GARAGE TESTING INSTRUMENT

This complete Electrical Testing Equipment is made by the world's foremost Electrical Instrument designers and makers. It meets every requirement for making electrical tests for the garage. With this WESTON MODEL 280, you can handle anything that comes your way in electrical work. And it doesn't cost a small fortune, either—mighty little for what it will let you make.

With the instrument, we furnish full information showing you how to use it And we have a staff of electrical experts whose advice is yours for the asking any time you think you need it.

We Will Make You a Worth-While Offer

It includes not only the Instrument but Special Service Features which will put you in a position to make the most of this rapidly growing and very profitable business. There is a limit to the number of garages to which the offer can be made, so don't put off looking into it. Write today for full particulars.

WESTON ELECTRICAL INSTRUMENT CO.
103 Weston Ave., Newark, N. J.
23 Branch Offices in the Larger Cities.

Do you want to be able to make quick, accurate tests to locate any defect in the electrical system? Or do you want to consume unlimited time taking apart every device and running a chance that you will discover the trouble sooner or later?

There are scores of places where trouble may occur. Unless you test electrically, you cannot eliminate any possible source of trouble without taking each device apart.

A poorly made, inaccurate electrical instrument merely adds to the uncertainty. What you need is reliable, positive knowledge. This model 280 really is the equivalent of six separate measuring instruments of different ranges. It is extremely accurate, durable and serviceable. With it, you can do the work quickly and intelligently, putting yourself a long way ahead of any competitor who has not Weston Equipment.

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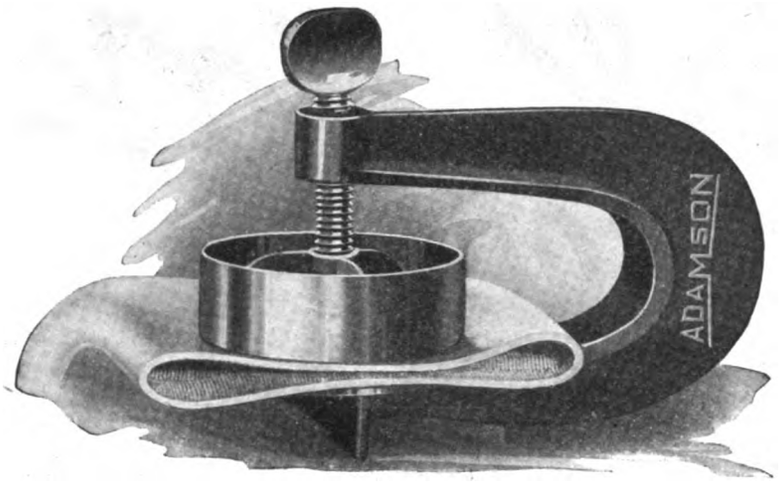

ANNOUNCING THE NEW

ADAMSON

5-MINUTE VULCANIZER

MODEL E

Meets the demand for a light and handy outfit for the quick repair of tube punctures.

Uses common gasoline—the most convenient and dependable fuel. Will vulcanize your tubes **anywhere** in five minutes.

Designed on the same proven principles that have made ADAMSON Vulcanizers the most practical and largest selling line in the world.

Sells complete with box of a dozen "Adamson" 5-minute Repair Gum Patches, for $1.50. Extra box of 12 patches only 25c each.

DEALERS!

This outfit will be a tremendous seller—Order now from your Jobber.

For larger tube injuries, tire and tube blow-outs, tread cuts, etc., the old reliable "Adamson" line is complete with several models for car owner and garage use.

"Adamson" Repair Gum is essential for best results. Its exclusive qualities and advantages are a guarantee against failure.

Sold by all Jobbers

ADAMSON MANUFACTURING CO.

EAST PALESTINE, OHIO

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CORK INSERT CORK INSERT CORK

FORD OWNERS

Blame the brake and the transmission, yet all the rattle and jar are unnecessary

When Mr. Ford Owner steps on the brake and the car jumps and jerks, he thinks it's something he must put up with in his car. He thinks the jerky, noisy "get away," the lurch when he goes into reverse—are part of the way the Ford naturally acts.

But it isn't so! The trouble isn't with the Ford. Its brake is all right. Its transmission is simple and positive. The whole trouble is in the transmission linings. Ordinary transmission fabric gets hard and glassy smooth from the constant pressure, friction and soaking in oil. When the brake is applied it grips but slips—then grips and slips again. That's what causes the vibration, that ruins the car and makes it rattle.

$3 per set of 3

ADVANCE
CORK INSERT
TRADE MARK REG. COPYRIGHTED 1917
TRANSMISSION LININGS FOR FORDS

$3 per set of 3

Allow the Ford to start and stop with velvety smoothness

The brake responds to the slightest pressure. The car makes a smooth, easy, quiet stop. It goes into low and picks up speed with the steadiness and quietness of a high cost car. It eliminates the mechanism-killing vibration.

The difference is entirely due to cork. Cork has the quality of "taking hold." The cork discs in Advance Transmission Linings *grip* at the slightest pressure. They wear very slowly. Never get hard or smooth surfaced. They end the *rattle*. Make a great car greater.

40,000 and 50,000 Miles—18 Months in Service

—These are some of the records made by Advance Cork Insert Transmission Linings. The sworn affidavits covering these records are on file in our office. No other transmission lining has ever made any such mileage records. It can't without cork, and we control the patents on the cork idea. No substitute for cork has the gripping or wearing qualities. Get the genuine.

JOBBERS! DEALERS! "Cork Inserts" are taking hold in great shape. Over 125,000 sets already have been sold. It is being advertised by full pages in Saturday Evening Post—full pages in the motor journals. We supply snappy display signs and dealer helps of different kinds. There's a mighty nice profit on every sale—plus an installation profit. Sold *only* through dealers. Every sale means a profit to some dealer.

Send the coupon—Dealers —don't lose good profits

Don't wait! The big season is right here! Send the coupon! Get acquainted with these inserts. Then get in your order. Order of your jobber or us. We'll give him credit.

Jobbers! The leaders are all lining up with "Cork Inserts." They're ordering by the thousands of sets. Don't lose out on this live profit maker.

COUPON

Advance Automobile Accessories Corp.
Dept. D3-1, 56 E. Randolph St., Chicago.

Send me a set of Advance Cork Inserts.

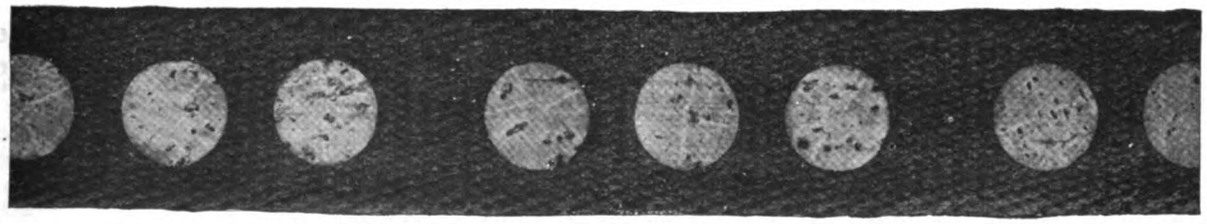
Name .....

City .....

State .....

Advance Automobile Accessories Corp.

Dept. D3-1, 56 East Randolph Street, Chicago, Ill.



CORK INSERT CORK INSERT CORK

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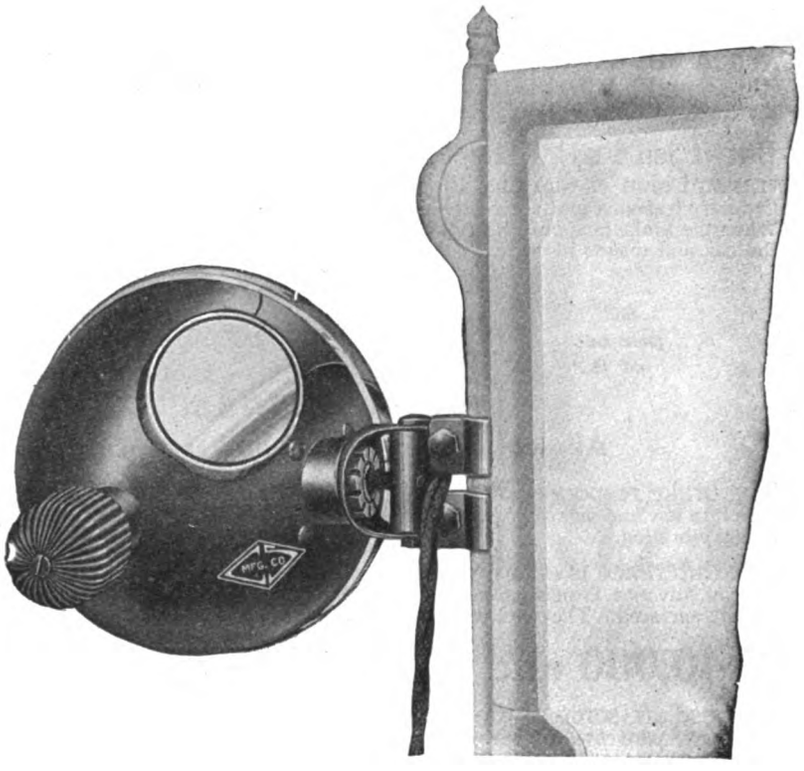
THE MARK

OF QUALITY

GIANT SEARCHLIGHT



LIST PRICES

With Mirror, $6.

Without Mirror, $5.

The most extraordinary lamp value ever offered to the trade.

The highest quality, lowest-priced searchlight ever produced.

Is built to C-S standards in every detail and is guaranteed to be the most efficient lamp that can be bought, irrespective of price.

The C-S Giant Searchlight is made on honor and sold on merit.

In quality, design, material, workmanship, finish and appearance it impels favor and sells at sight.

It is chosen without hesitancy, even from among lamps that are listed at several times the price.

It adds to the appearance of any car. Its utility, service and the satisfaction it affords insures to the car owner the greatest lamp value obtainable.

Aside from the extremely liberal discounts C-S dealers enjoy the prestige, profits and benefits of selling the best car utility of the year.

The lamp shell is black enamelled steel and the reflector is nickeled brass silver plated. The lamps are Mazda C (gas filled).

Write today for details of this special proposition.

CULVER-STEARNS MFG. CO.

WORCESTER, MASS. **DETROIT, MICH.**

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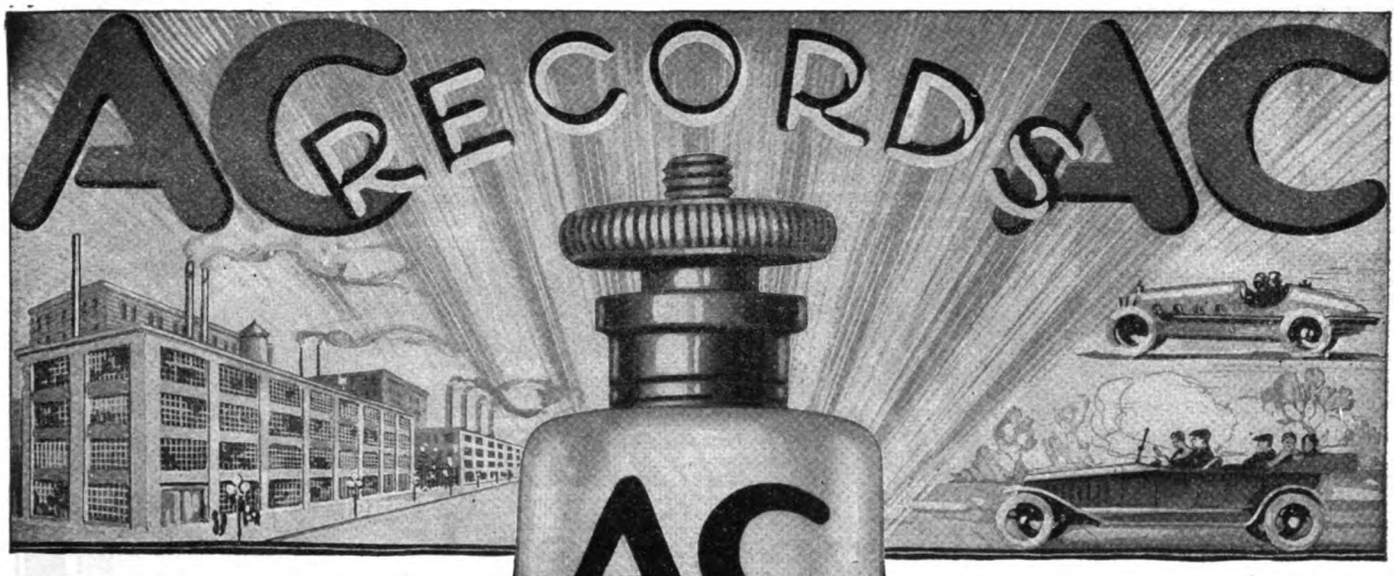


All Commercial Records Broken

The adoption as standard equipment of A C Spark Plugs by the following makers of quality cars, constitutes a record which no spark plug has ever approached. All had the same chance—the manufacturers play no favorites. Merit alone won for A C in open competition.

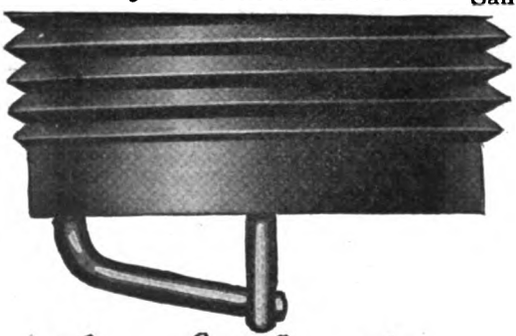
All These Cars Are A C Equipped

Cadillac	Buick	American-La France
Pierce-Arrow	Oakland	Fostoria
Packard	Oldsmobile	Disbrow
Marmon	Jeffery	Maxim
Hudson	KisselKar	Federal
Chalmers	Premier	G. M. C.
Hupmobile	Knox	Netco Truck
Chandler	Jordan	Sandow Truck
Haynes	Liberty	Signal Truck
Chevrolet	Crane-Simplex	Brockway Truck
Dort	Phianna	Gabriel Truck
Cole	Westcott	Gramm-Bernstein Truck
Reo	McFarlan	Moreland Truck
Paige	Paterson	Wilcox Trux
Peerless	Detroiter	Sterling Truck
Pilot	Davis	Republic Truck
Abbott	Lexington-Howard	Diamond T Truck
Pathfinder	Daniels	Four Wheel Drive
White	Murray	Lincoln Truck
Delco-Light	Bour-Davis	Samson Tractor
Saxon	Scripps-Booth	Acme Truck
Stutz	Monroe	Old Reliable Truck
National	Singer	
Velie	Stephens	
Jackson	Dodge Bros.	
Apperson	McLaughlin (Canada)	
Anderson		
Stearns-Knight		

Special AC for FORD CARS

A thorough study of Ford motor conditions has enabled us to develop a plug which gives a better performance in Ford motors, than any plug previously offered for that service.

Try A C's in Your Ford



The Standard Spark Plug of America

Track and Highway Records Broken

Hudson Super Six records with A C Equipment include the following: 75.69 miles in one hour at Sheepshead Bay. 102.5 miles at Daytona.

1819 miles in 24 hours at Sheepshead Bay. (The previous record made by a racing car was 1581 miles.)

Dash from Pacific to Atlantic in 5 days, 3 hours and 31 minutes—starting back the same day. Return trip made in 5 days, 17 hours, 32 minutes.

Non-stop road record by Patterson in Grand Prix using same set of A C plugs in both Vanderbilt and Grand Prix.

Buick Light Six broke Los Angeles, San Francisco record with average speed of 43 miles per hour.

Cadillac Eight Coast to Coast, 7 days, 11 hours, 52 min. Previous record held by Stutz A C equipped.

Marmon, Coast to Coast dash, 5 days, 11 hours, 30 min.

Nearly all cars in Giants Despair Hill Climb were A C equipped. Such coming cars as Maxwell, Mercer and Pathfinder used A C's in this climb. They are not regularly equipped with A C's.

The success of A C Plugs in the past is due to the fact that every change and improvement is made along sound engineering lines and in 1917 their superiority over other makes will be even greater than in past years. This evidence should make you use A C plugs on your car, if it is not equipped already with them. On sale everywhere.

SOLE MANUFACTURERS

Champion Ignition Company, Flint, Michigan, U.S.A.

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Liners—Shims

Perfection Snap Cable Terminal

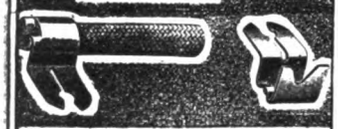
Standard Battery Con.

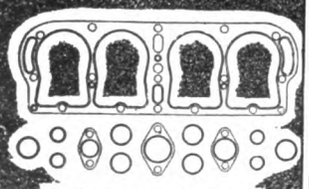
Clero Electric Push Buttons

Standard French Type Gaskets

Ford Lighting Outfits

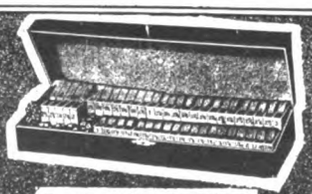
Spark Plug Gaskets Carried in Stock


Copper and Brass Cable Terminals


Gasket Sets for Ford Cars

Flange Exhaust Gaskets

Slip Snap Terminals


Copper-Asbestos Gaskets

Slip Snap Terminals

Open Closed
Two Point Hard Rubber Switches

Clero Hand Horn

Clero Electric Push Buttons

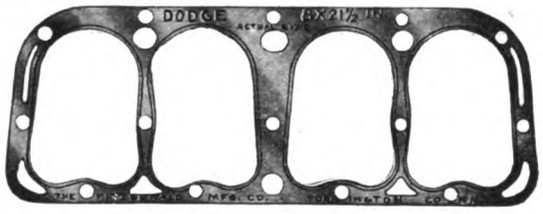
FITZGERALD MFG. CO.

Never-Leak

COPPER-ASBESTOS

GASKETS

There's as much need for quality in a gasket as in any mechanism of the machine you use, and this applies to material and to shapes that fit. We use stock that is highest grade, and produce gaskets suited for every practical need with automobile vehicles. We've specialized gaskets just as we have a very wide range of sheet metal products, and today are producing cylinder block gaskets for



FORD	**VIM**	**DODGE**
OAKLAND	**ENGER**	**MONROE**
CHEVROLET	**MAXWELL**	**(75) OVERLAND (83)**

There's no economy in using makeshifts. The best results are obtained from the specialty. We can supply anything in gaskets, and cheaper than they can be obtained elsewhere. We are the largest manufacturer in the industry and we have attained this position by quality of products and reasonable prices.

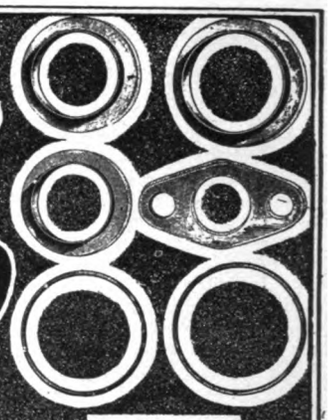
We can make deliveries to schedule.

We manufacture and can quote you the best prices of the industry for the same qualities.

Catalogue and Price Lists Supplied at Request.

FITZGERALD MFG. CO.,

TORRINGTON, CONNECTICUT


Cadillac Gaskets

Standard "Lug" Type Terminals

Perfection Spring Battery Con.

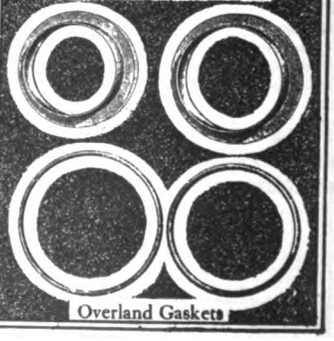
Shim Stock

Steering Post Attachments

Ford Ignition Assembly

Standard Closed Type Gasket

Standard Flange Fittings


Overland Gaskets

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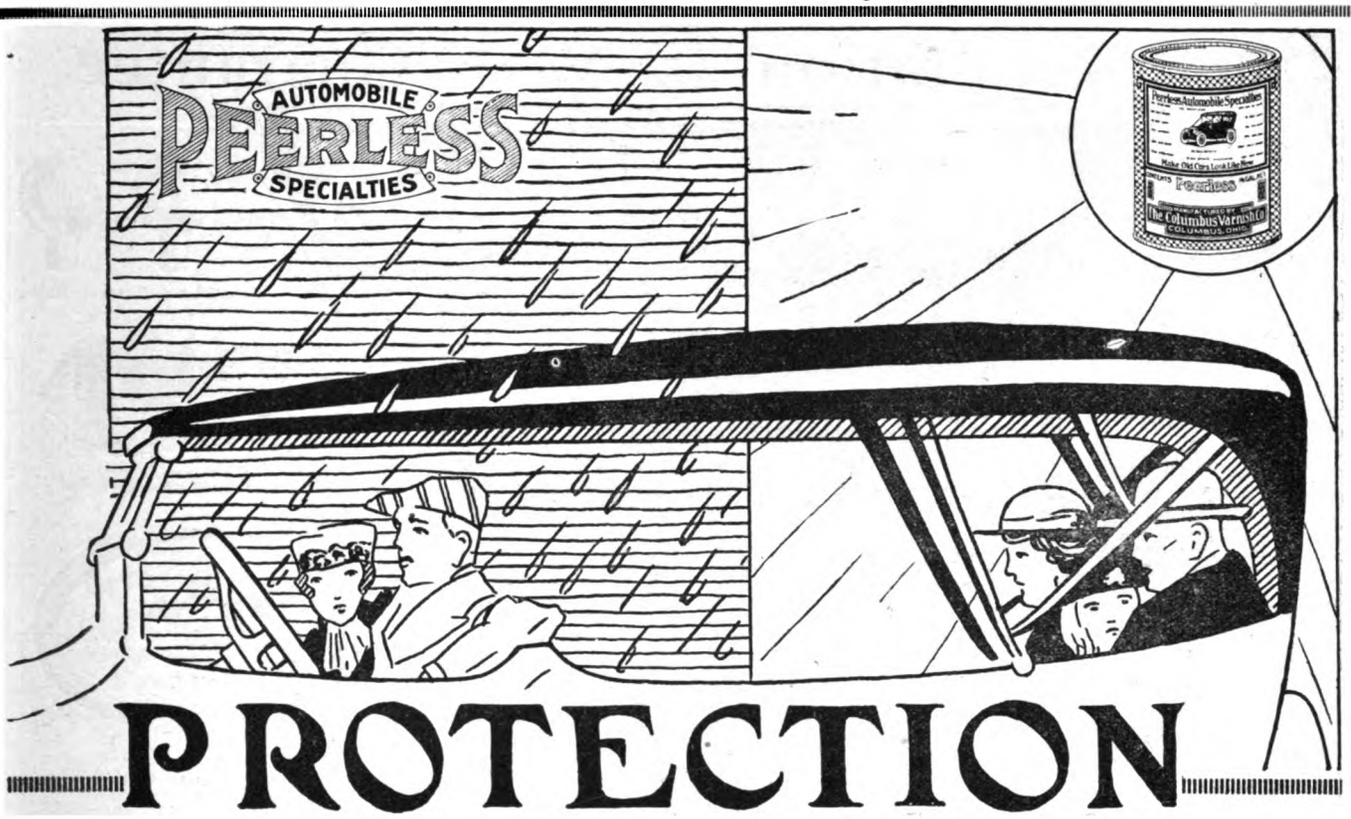

PROTECTION

IN ALL KINDS OF WEATHER

SPRING——SUMMER——FALL——WINTER

Use *Peerless Mohair Top Dressing* [To Renew and Waterproof Mohair Tops]
Peerless Leather Top Dressing [To Preserve and Renew Rubber, Leather and Pantasote Tops]
Peerless Lining Dye [To Dye Faded, Stained and Grease Spotted Linings of Tops]

MAKE OLD CARS LOOK LIKE NEW

Peerless Automobile Specialties

Used and endorsed by over ***8000 Automobile Painters*** and ***Hundreds of Thousands*** of cans sold to pleased car owners

Peerless Specialties are Top Dressings, Lining Dyes, Cushion Dressings, Lamp Enamels, Cylinder Enamels, Body Polishes, Varnish Renewers, Battery Box Enamels, Fender Enamels, Rim Paint, Tire Paint, Orange Shellac, Owner's Painting Outfit, and Color Finishes in the 6 colors of Red, Gray, Green, Blue, Yellow and Black. *All Peerless Quality.*

Peerless Specialties Are Sold by

ACCESSORY JOBBERS — DEALERS — GARAGES — HARDWARE JOBBERS AND DEALERS.

Used by Automobile Painters, Owners, Chauffeurs and Garage Men.

Dealers' Helps for 1917

New Window Display Material Ready April 1st includes Hangers, Two Kinds of Signs, Streamers showing uses of the goods. All in colors. New business producing inslips for your mail. Mailing cards, etc. Write for our latest circular showing some advertising that car owners will see and make them ask for Peerless goods. Be sure you have our 1917 Catalogue.

Made Only by ***The Columbus Varnish Co.,*** *Makers for 25 years of Quality Varnish* ***Columbus, O.***

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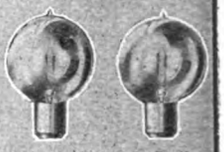
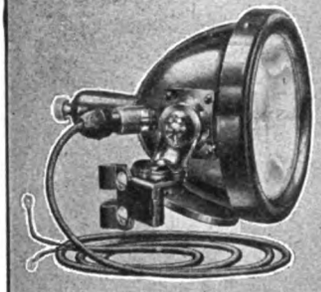
Our Reputation is *Your* Guarantee

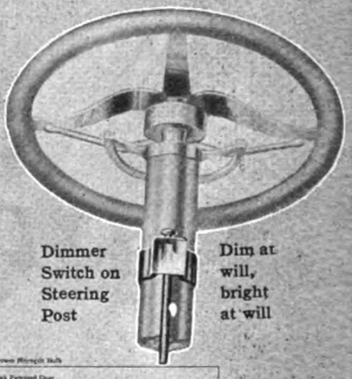
VERSAL PRODUCTS
FOR THE
UNIVERSAL CAR
DETROIT STARTER COMPANY
DETROIT, U.S.A.

Electric Tail Lamp


Extra 24 c. p. Nitrogen Bulbs

Head Lamp Control

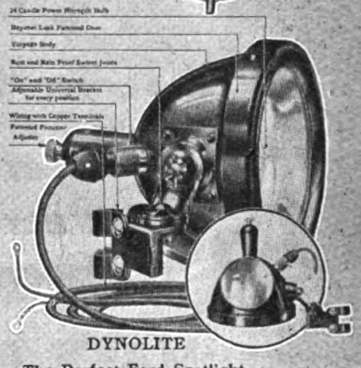

Spotlight


Dimmer Switch on Steering Post

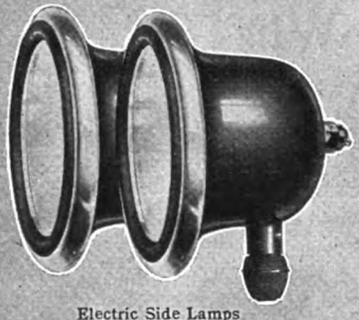
Dim at will, bright at will

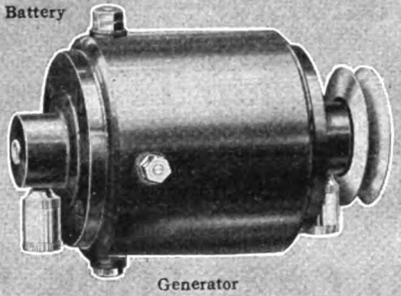
Storage Battery

Regulator



The Perfect Ford Spotlight


Electric Side Lamps


Generator

Genolite Type C and D ▽ Constolite — Dynolite

Genolite *Type "C"* $29.85

An improved electric lighting system for lighting all five lamps, heads, sides and tail — gives brilliant light from storage battery in both side and tail lamps (which we furnish) irrespective of whether motor is running or idle. Provides also two nitrogen head-light bulbs lighted through patented regulating device which governs flow of current taken from magneto, giving more constant light at low engine speeds and can be dimmed at will at high speeds. Installed in two hours.

Genolite *Type "D"* $31.85

Includes the following — a storage battery — a generator with "cut out" which automatically charges the battery — two beautiful side lamps with bulbs — one high grade tail lamp with bulb — one high grade windshield spotlight with bulb — one coil box for automatically regulating spotlight — which also automatically dims headlight. Together with necessary wires, brackets — absolutely complete, ready for installation. No extras needed. Installed in two hours.

Dynolite $6.85

A powerful windshield spotlight designed exclusively for Ford cars. Cannot be excelled for the quality of material throughout, its many exclusive features and the exceptional power and brilliancy of its light. Operates off magneto through patented regulator which automatically delivers current at the proper voltage, keeping light constant in power irrespective of motor speed. Only two terminal connections to make installation.

Constolite $4.85

Gives a full driving light at practically all speeds — light in both head lamps at all times. Wired in multiple to prevent burning out — dimmer switch conveniently located on steering post — an exclusive feature found in no other device control. All wires, two extra bulbs, and dimmer switch provided. Installed in few minutes

DEALERS! This is the greatest sales producing accessory of the year. Write for particulars. Dept. G

Perfect Electric Lighting *for* Ford Cars

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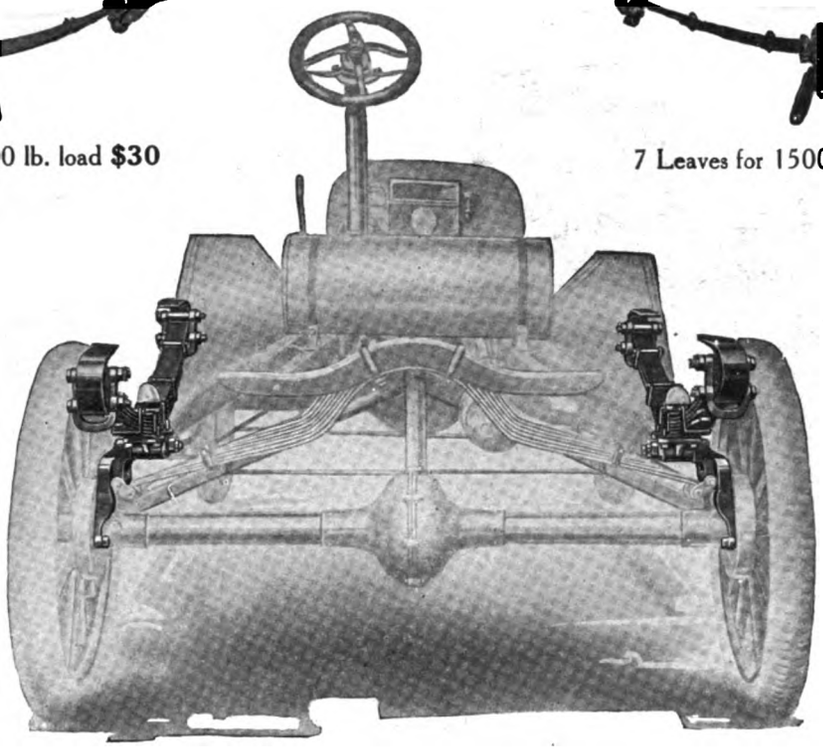
5 Leaves for a 1000 lb. load $30

7 Leaves for 1500 lb. Loads, $30

$30

This Model

Is Enough to Pay for 1000 to 1500 Pound Capacity Truck Units



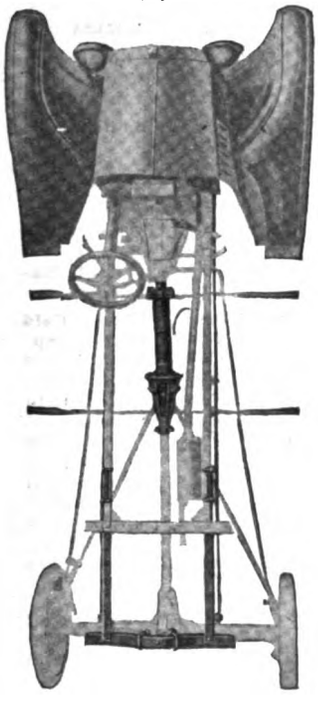
$65

or

$90

Is Enough to Pay for a Ton Capacity Truck Unit

Olson Extension, 24 to 30 in., $50



Spending a Dollar to Save a Dime Makes a Dime Come High

Every truck unit prospect you have—no matter how live or how remote he may be—is a prospect because he **wants to buy a truck and save money doing it.**

It's easy to prove to him that a $30, $50, $65 or $90 investment is a lot bigger saving at the start than a $350 investment. He is business man enough to see at a glance the greater per cent. of profits the same volume of business will return on a $30 to $90 expenditure, as against a $350 investment. He will know in a flash what you mean when you tell him it is false economy to start out by spending a dollar to save a dime.

Let him save his dime, and his dollar, too. The OLSON Unit pays out big—and it costs only a little. He can have delivery now from our 1000-a-day capacity, on as many Units as he needs—and he can come back for more.

Get going now—at the beginning of things—and make good. **Write for complete details, dealer discounts and territory.**

$65

Ton Capacity Without Brake

Swedish Crucible Steel Co.

Factories:
Detroit, Mich. Windsor, Ont., Can.
Chicago Branch: 1344 Michigan Ave.

Address Wheel Department

$90

Ton Capacity With Brake

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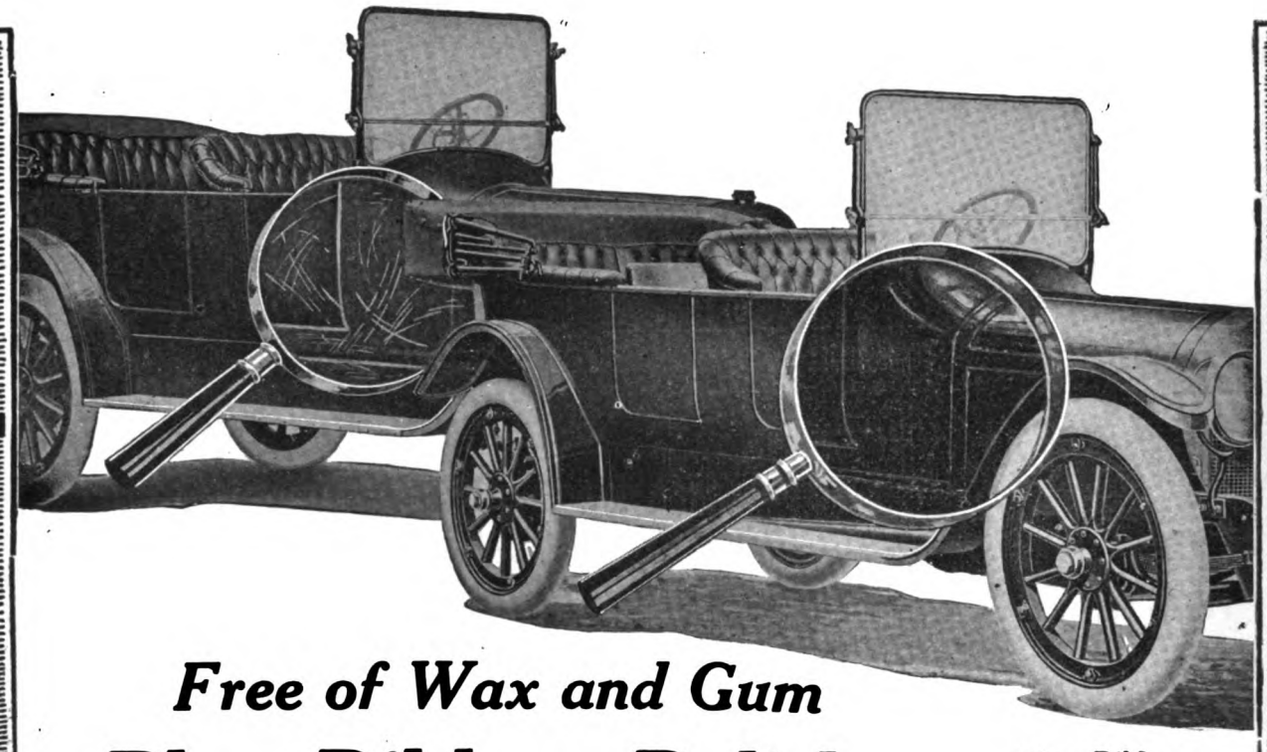

Free of Wax and Gum

Blue Ribbon Polish

Is a standard product. Its superior quality is known of by automobile owners the country over. Being free of wax or gum it cannot coat the finish of a car nor retain grit or other abrasives that would destroy appearance. It penetrates and revives the finish, restoring its lustre, and it cleanses and polishes with the one operation.

It's an ideal compound. The results are certain. Other polishes may be destructive and quality is questionable until it has been proven by long service experience.

The cost of material, production and overhead have increased through the year. The quality, price and discounts to the trade of all Blue Ribbon products are unchanged. The profits are positive. Blue Ribbon products cost no more than stock that is inferior and unknown.

Those who sell Blue Ribbon products benefit directly through our high quality and low prices. Being prepared in sealed containers and fully guaranteed the jobber, dealer and consumer are absolutely protected. When you stock Blue Ribbon products you can supply any demand.

This entails a very moderate investment. There is constant sale and satisfied customers will increase your business.

Have you listed Blue Ribbon products in your 1917 catalog?
If you do not know all about these specialties, write us today

Blue Ribbon Specialties

- **Blue Ribbon Cream Metal Polish** For any metal.
- **Blue Ribbon Black Enamel** For Lamps, Hoods, Radiators and metal parts.
- **Blue Ribbon Leak Proof Cement** A Permanent Radiator Cement.
- **Blue Ribbon Cold Cream Hand Soap** Contains no pumice or sand.
- **Blue Ribbon Auto Body Gloss** For Automobiles and Furniture.
- **Blue Ribbon Nickel Polish** For Nickel Parts and Trimmings.
- **Blue Ribbon Auto Top and Seat Dressing** A Waterproof Dressing that restores Tops and Seats.
- **Blue Ribbon Oil Soap** A pure Vegetable Oil Soap for any purpose.

INTERNATIONAL METAL POLISH CO.

INDIANAPOLIS INDIANA

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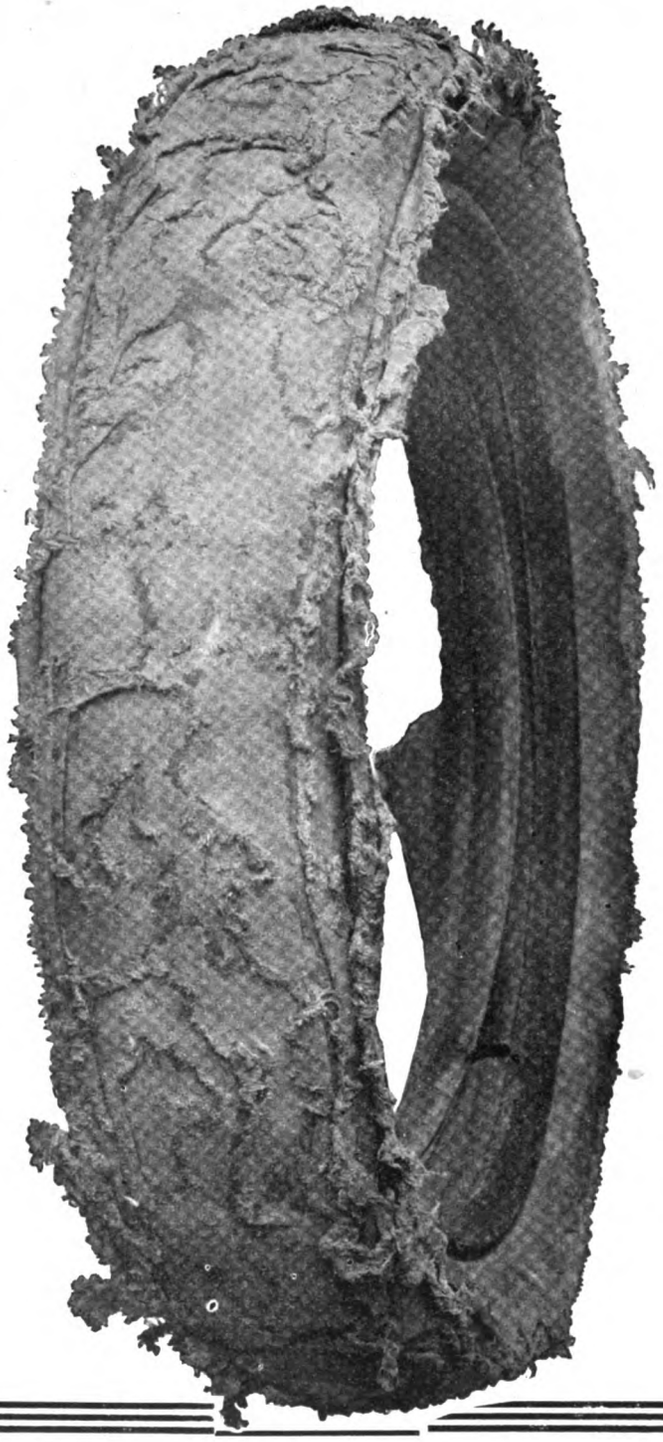
What would this exclusive agency be worth in your town?

An agency that means you would earn all profits—be protected against price cutting—and have big revenues from a most successful tire and tube saving device. What would the agency be worth now—since tires and tubes have advanced in price—making every owner a prospective customer for four such devices?—

MAXOTIRES



A Striking Example

A shoe that afforded usual mileage was equipped with a MAXOTIRE.

The average owner would have discarded it—yet with the MAXOTIRE, gave thousands of additional miles of service.

This was so much net gain to the owner.

The MAXOTIRE is as good as new, and will continue to save tires and tubes.

(This tire was exhibited at many STATE FAIRS and AUTO SHOWS and was examined by tens of thousands of Auto Owners.

MAXOTIRES

We do business with but one dealer in any place and do not sell jobbers or consumers. Our proposition is broad and extremely liberal.

No other accessory sells so quickly or affords equal satisfaction. *The cost of tires and tubes is advancing and owners are seeking service giving and money saving equipment.*

Country-wide advertising brings queries from every city, town and village. Our dealers do all the business.

The quality of MAXOTIRES insure reorders and big net profits. MAXOTIRES sell themselves.

Our old dealers are with us this year—some are ordering MAXOTIRES in Car Load Shipments. Hundreds are ordering from a dozen to five-hundred tires at a time. You will be "doing it too"—if you get a few MAXOTIRES started. They sell themselves.

K & W RUBBER COMPANY **Third Street, ASHLAND, O.**

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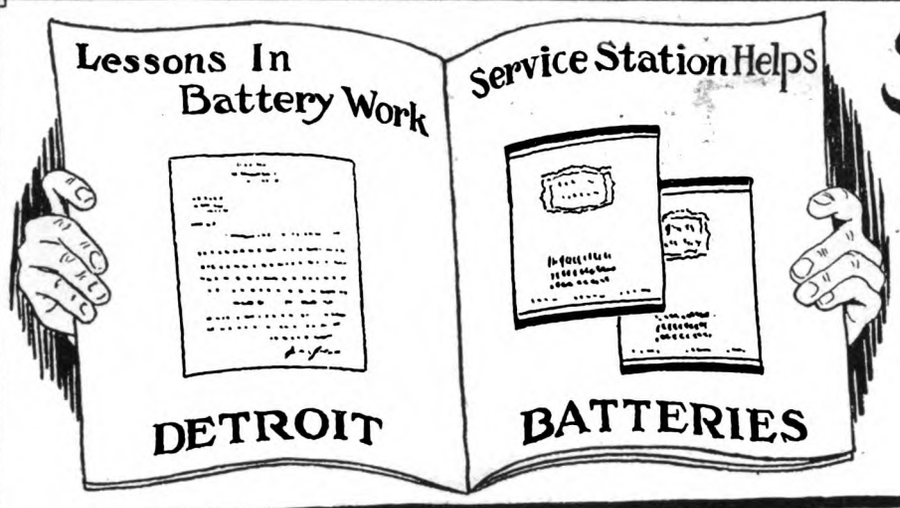


This Free Portfolio will lead to this

DO YOU realize that there are just two things on a motor car that wear out and must be replaced time and time again—tires and batteries. These are the only two accessories which insure a steady, permanent, resale business for the dealer who handles them.

The dealer who enters the battery business today, steps in just at the beginning of the greatest growth. The business will be trebled within the next three years.

This portfolio will explain how easily the Detroit Battery Company has made entering the battery business for the dealer who can measure up to their standards.

This portfolio will show you how we have taken all the mystery out of the business—how we even give a free course of instruction in practical battery work to our own service station men—how we help them get business—show them how to advertise and how to treat their customers. The portfolio shows actual samples of the various service station helps—literature, signs, etc. It shows the office system which we have devised for our service stations.

And it will also contain a personally dictated proposition, showing you just what it will cost you to get into the battery business, what equipment is required—what our proposition to you would be and the probable profits you could expect in your particular territory.

And it will describe Detroit Batteries, which will be the foundation and a mighty safe sound foundation for the business. It will show how they have been made the longest lived, most powerful batteries on the market.

As a wide awake dealer you ought to know the possibilities in the battery business.

You ought to have this portfolio right now.

It won't cost you a cent. Just fill out this coupon and mail it today.

DETROIT BATTERIES

Detroit Battery Company

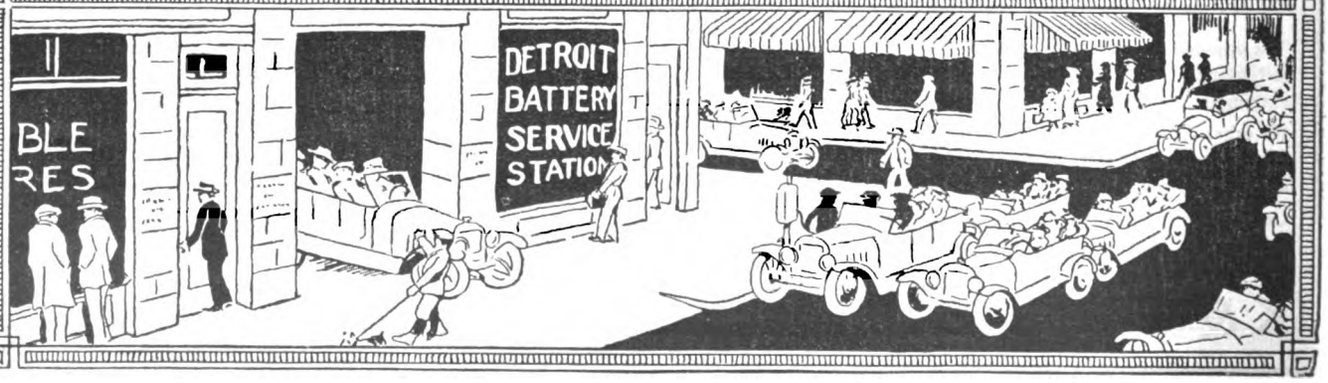
110 E. High St., DETROIT, MICH.

Detroit Battery Co.
110 E. High Street
Detroit, Michigan.

Send me the Portfolio.

Name .....

Address .....



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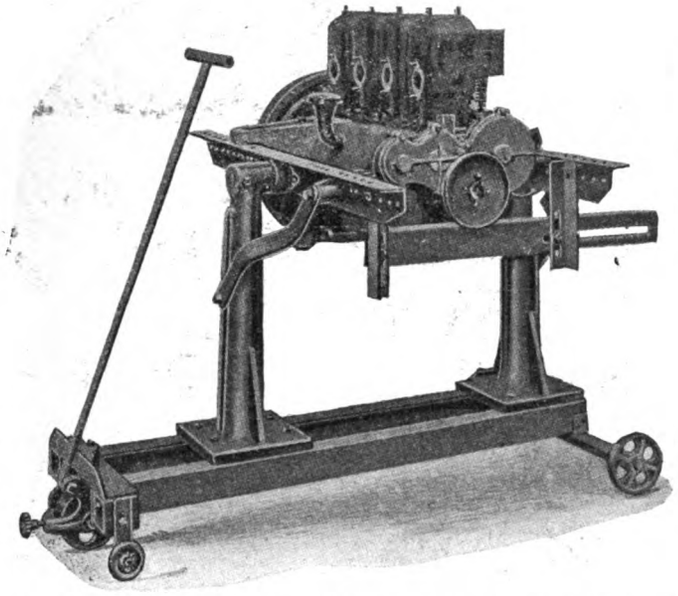
MANLEY GARAGE EQUIPMENT

EFFICIENCY AND INCREASED PROFITS



Portable Stand in Horizontal Position with 4-Cylinder Motor, Showing Use of Three Point Suspension Bar

With this

EVERY WAY ENGINE STAND

Your Engine Repair Work Becomes a Pleasure.

The Danger of Damaging the Engine and Injuring the Workman is Eliminated

Holds an engine in any desired position, 100 if wanted. Locked rigidly in each position. Mounts easily any type of motor suspension, 4 point, 3 point or Ford. Universal in all its adjustments. Motors must be overhauled at regular intervals and this work is the most accurate on the whole chassis and cannot be properly handled without this stand. It allows the workman to get at any part easily and to the greatest advantage. It therefore promotes better work, quicker work and accurate work. The only practical stand, and hundreds sold. Built Stationary and Portable.

Price, Stationary : : $37.00
Price, Portable : : : $49.00

THE UNIVERSAL AUTO PRESS

Capacity 22 tons.....42 in. clearance

Specifications.

Upper Press takes work 18½ in. wide x 19 in. under screw. Lower Press 42 in. wide x 21 in. between tables. Maximum length under screw 46 in. Hand wheel 14 in., threads in nut 3½ in. long. Built of heavy 5-in. channels throughout. Weight 450 lbs. Total height 70 in. Floor space 46 in. x 30 in.

A Press Is a Necessity and Used Continuously.

A powerful press is now recognized as a necessity in every Garage, large or small. But unless the Press has the necessary capacity both in pressure and clearance to handle every piece of work which must be done, it is of little use. The Manley Press has both, and in addition it has

Other Features found in no other press, which are of vital advantage for Garage work.

These Features Are

1ST. HIGH SPEED leverage of 1000 to 1 for ordinary work. (Ten times quicker than a ratchet.)

2ND. HIGH POWER leverage (Ratchet) of 2200-1 to 5000-1 for extraordinary work. (Tremendous power—little effort.)

Screw may be struck a blow under pressure with no damage to Press. (Equal to a hydraulic Press.)

42-IN. CLEARANCE. This clearance is necessary, look around and satisfy yourself that it is.

LOWER TABLE instantly adjustable on pins (no bolts to remove no danger to workman).

BOTH TABLES have wide laces to properly support the work.

SCREW 2 in. diameter 4 pitch square thread, 12 in. travel. It does not revolve.

CHANNEL BLOCKING, properly braced (will not crush).

"V" Plate which automatically adjusts itself to any size arbor, mandrel or shaft.

Quick Action Portable Benches

Veritable floating repair shops. Take these benches to the car with all the necessary tools, parts, etc. Is this not the logical way?

They are the most used pieces of equipment in any Garage—are never idle, and are therefore great money makers by speeding up work. No. 1 Bench (shown in cut) is intended to be used all over the Garage for light work. No. 2 Bench is for heavy work and intended to be used in the repair shop right at the car, thus saving hundreds of steps to the Stationary benches every hour. Wheels can be locked for filing, etc.

Also Portable Floor Cranes—Specialized Construction for Automobile Work.

UNITED ENGINE & MFG. CO., - - - - Hanover, Pa.

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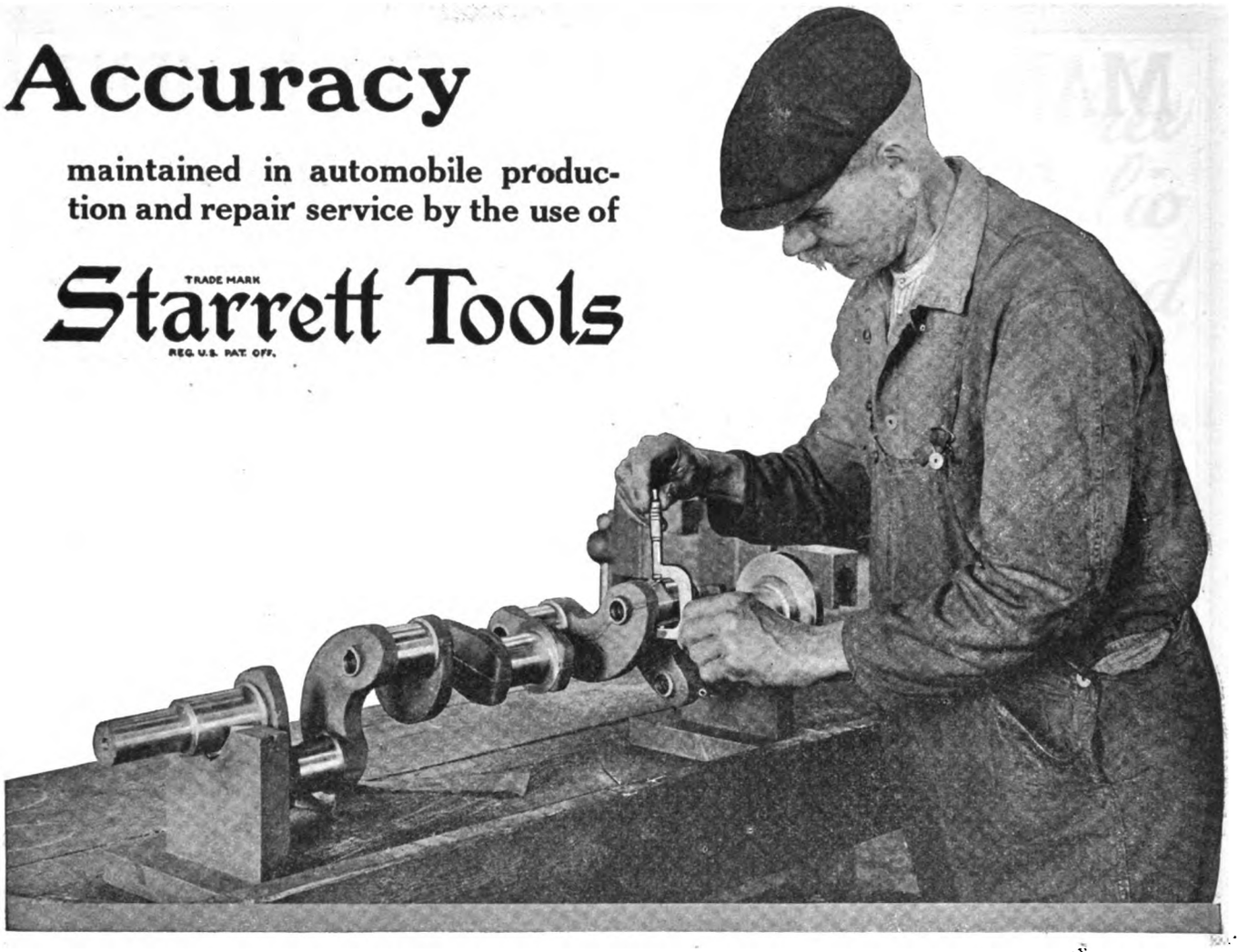
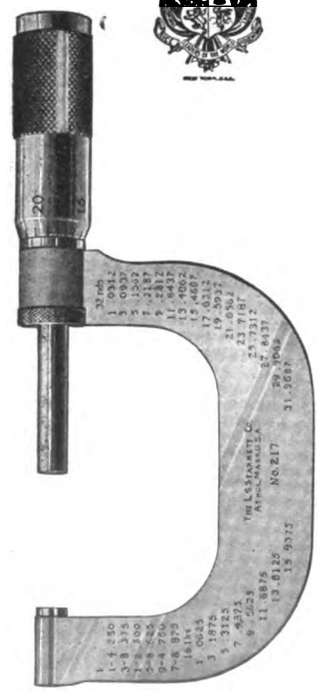
Accuracy

maintained in automobile production and repair service by the use of

TRADE MARK
Starrett Tools
REG. U.S. PAT. OFF.





Whatever your interest in automobiles—whether you are an engineer, manufacturer, superintendent, or garage owner, you will find that Starrett Tools are the most practical and efficient instruments for maintaining accuracy in mechanical work. They are used in practically every toolroom and shop in the country, devoted to the production or repair of automobiles.

From the laying out and making of fine dies and jigs for duplicate production to the inspection of finished parts in the factory; and for all kinds of measuring on service work, these tools are indispensable. With a line of 2100 styles and sizes to select from, there are tools that the manufacturer should place in his toolroom for shop standards; other tools that should be furnished the inspection department, and others that the individual machinist should have as part of his kit.

The line includes steel tapes, rules, squares, levels, calipers, dividers, micrometers, vernier calipers, height gages, surface gages, tap, thread and drill gages, etc.

We will send free to any engineer, executive or machinist our 342 page catalog No. 21 GT, describing the full line.

The L. S. Starrett Co.

THE WORLD'S GREATEST TOOL MAKERS

Athol, Mass.

42-580

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The ACCESSORY and GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests.

VL VI. PAWTUCKET, R. I., APRIL 1917. No. 12

Group Organization Method Adopted by the M. A. M.

Accessory Manufacturers Also to Co-Operate on Extensive Scale in the National Defense.

The April monthly meeting of the Motor and Accessory Manufacturers was the most important ever held by the organization. It was not only decided to co-operate on an extensive scale with the Council for National Defense and a committee appointed for that purpose, but it was voted to inaugurate a new system of administering the activities of the organization, along lines developed by L. M. Bradley, general manager.

E. H. Broadwell, vice president of the Fisk Rubber Co., was appointed as representative of the M. A. M. on the Council for National Defense at the suggestion of Howard E. Coffin.

Ninety-five per cent. of the members voted their approval of putting in force the "grouping" method of handling the organization's activities on lines similar to that followed out in the work of the S. A. E., different groups being formed of men manufacturing similar lines under such heads as engines, tires, rubber, electrical products, axles, wheels, bearings, bodies, gears, carburetors, springs, steel and similar divisions.

The grouping system will be worked out by a committee composed of E. W. Stiger of the Stromberg Motor Devices Co., W. R. Rutherford of the B. F. Goodrich Rubber Co. and L. M. Bradley, general manager of the association.

It was also decided to expand the credit department, which has become one of the most important departments of the organization. Expenditures of $10,000 or more aditional in this work are planned and in addition to the regular reports that are now furnished on manufacturers in the trade reports, will also be given members on airplane, motorcycle and bicycle makers. A new credit committee, composed of credit managers of the member companies has been appointed to carry out the credit work in conjunction with the finance committee. This committee was made up of the following: R. D. Mock, treasurer of the Hydraulic Pressed Steel Co.; F. R. Wilhelmy, assistant treasurer of the Standard Parts Co.; R. M. McConnell, credit manager of the Firestone Tire and Rubber Co.; M. C. Dittman, secretary and treasurer of the American Bronze Co.; G. H. Johnstone, credit manager of the Armour Curled Hair Works; M. A. Moynihan, secretary and treasurer Gemmer Mfg. Co.; R. S. Preble, treasurer Splitdorf Electrical Co. The meetings of these committees will be held at the discretion of the members, probably every six months or quarterly.

The annual meeting in New York City during the National Automobile Show week will be continued and in addition it was voted to hold mid-season meetings, the first of which will be held on Sept. 12, 13 and 14, at Atlantic City.

E. H. Broadwell, Vice President of the Fisk Rubber Co., Chicopee Falls, Mass.

The following firms were admitted to membership at the meeting: Standard Steel Castings Co., Cleveland, O.; Standard Woven Fabric Co., Walpole, Mass.; Jackson Cushion Spring Co., Jackson, Mich.; Jacobson Machine Mfg. Co., Warren, Penn.; National Malleable Castings Co., Cleveland, O.; Merchant & Evans Co., Philadelphia, Penn.; Weston Electrical Instrument Co., Newark, N. J. The Standard Roller Bearing Co. and the Armour Curled Hair Works were reinstated to membership.

United Motors Co. Is Showing Big Earnings.

Gain of $5,000,000 in Nine Months on Total Sales of $23,500,000 Is Reported.

The United Motors Corporation for the nine months ending March 31 reports gross sales of the constituent companies totaling $23,500,000 as compared with $17,200,000 in the corresponding period last year. Estimates based on this showing indicate that the sales for the year will be approximately $34,000,000, or an increase of about 40 per cent. over last year.

Alfred B. Sloan, Jr., president, in speaking of the showing, says: "Earnings are at the rate of $9 a share, and this in spite of the great increase in cost of material and labor. The Harrison Radiator Corporation, one of the new acquisitions of the United Motors Corporation, has booked orders for between $5,000,000 and $6,000,000, for delivery beginning July 1 next. This additional volume of business will considerably increase the earnings of the corporation as a whole.

"The Harrison company is building extensive works in addition to their present plant in Lockford, N. Y., for the purpose of handling this business. The new ball plant of the New Departure Manufacturing Co. at Bristol, Conn., will be producing in June. This will considerably increase the earnings of that company.

"The corporation has actual contracts and orders in hand to insure the full operation of the different plants up to July 1, 1918, and if present conditions continue the sales of the corporation for next year, even outside those from new properties, should considerably exceed those of this year.

PISTON RING ORDER FOR SOUTH AFRICA.

The Continental Piston Ring Co., Memphis, Tenn., has received an order for 100 dozen Hi-comp piston rings to be shipped to the Barkley company of Cape Town, South Africa.

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Federal Gasoline Report Finally Issued

Trade Commission Publishes Findings on the Investigation Into Producing and Marketing.

The Federal Trade Commission, which has been investigating the methods of producing and marketing gasoline in this country, in its report to Congress suggests that, as the product sold under the name of gasoline has deteriorated in quality, a variety of grades being marketed under the same name, Congress should fix a standard of quality. The commission also recommends the segregation of ownership of pipe lines from other branches of the petroleum industry.

The commission in its main point, stated that it found that the Standard Oil interests dominated the trade in the majority of marketing territories, and, further, that a state of competition did not exist among the segregated Standard companies; also, that some legislation should be enacted to meet the new conditions. The report also contends that the combination of pipe lines with other branches of the industry has tended to establish and perpetuate a monopoly, although it states that the commission has not found conclusive evidence of collusion among the various Standard companies in violation of the dissolution decree.

As to the matter of prices the report says: "Correspondence of the difference of prices (in 1915) with Standard marketing territories, itself points to arbitrary price making. But the arbitrary character of the inequalities in price is conclusively demonstrated by the facts that as between most of the territories there were no such differences in demand and supply—and the margin between cost and price was widely different in the different territories."

Contending that the rise in wholesale prices of 75 to 85 per cent. in 1915, and a sharp advance in retail prices were not due to the law of supply and demand, the report says that the demand increased about 38 per cent. in that year, while the production increased 31 per cent.

GENERAL ELECTRIC'S NET WAS OVER $15,000,000.

The General Electric Co., Schenectady, N. Y., made a net profit of $15,294,091 in 1916 on sales of $134,242,289. Additional profits of $3,866,881 were realized from other sources. After deducting dividends a balance of $10,000,000 remained for the year, or nearly $7,000,000 more than the balance resulting from operations in 1915. Expenditures of $8,828,254 were made during the period for additions to the plant.

At the close of business for the year there were 79,000 employees on the books of the company and its subsidiaries.

NEW YORK BRANCH WINS BEARINGS SERVICE CONTEST.

The Bearings Service Co. recently held a display contest in which the various branches throughout the country competed. The New York City branch won first honors with a display showing an automobile chassis with the various bearing locations indicated by ribbons attached to the points and leading out to placards which gave the name of the part in which the bearing was used and type of bearing.

Comet Six with Lewis Engine

SPECIFICATIONS.

Engine—Six-cylinder, en bloc, 3⅜x5.
Clutch—Multiple disc, dry plate.
Gearset—Selective type, three speeds, reverse.
Lubrication—Force feed and splash.
Cooling—Thermo syphon; tubular radiator.
Ignition—Delco.
Starting and Lighting—Dyneto two-unit system.
Carburetor—Zenith with Stewart vacuum feed.
Rear Axle—Full floating, short propelier type.
Springs—Front, semi-elliptic; rear, cantilever.
Wheels—Artillery type; wire wheels, $100 extra.
Tires, 33x4; non-skid rear.
Wheelbase—125 inches.

Northwestern Auto Supply Co's New Plant

Enterprising Concern at Billings, Mont., Has Phenomenal Growth in 2½ Years.

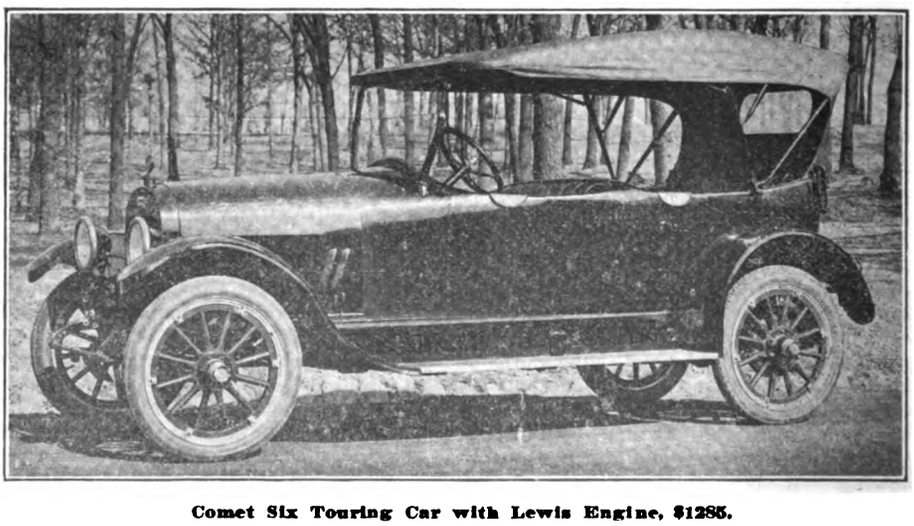
Work is being rushed on the new three-story brick building of the Northwestern Auto Supply Co., Inc., which is being erected at Billings, Mont., at Fifth avenue and North Broadway, next to the Great Northern tracks. The structure will cost $30,000 and when completed will be stocked with $150,000 worth of automobile supplies and accessories.

The building will be 50x100 feet and will form one unit of a structure 100x140 feet, additional ground space for the second building having been acquired adjoining the present site.

This company's phenomenal growth in the 2½ years of its existence has resulted largely from its standard policies, which are adhered to strictly in all cases. They deal only with the dealer and no retail trade is accepted.

The firm was organized in Billings in 1914 and was originally incorporated for $50,000. The original quarters were on First avenue and North 30th street. The present quarters at First avenue and North 23d street were taken in January, 1915. At first only a part of the 50x140 foot one-story structure was occupied, but the business grew rapidly and the whole space was ultimately taken and now even these enlarged quarters have become inadequate. Last year the company reorganized and increased its capital to $250,000. It is expected that in the near future the capital will be increased to $1,000,000.

E. C. Guthard, the present general manager, and C. H. Guthard, president, organized the company, which was the third in the United States to deal exclusively wholesale in automobile accessories. It has since become the largest and practically the only concern of its kind in the northwest territory, and has the exclusive distributing agency for 40 eastern manufacturing concerns.



Comet Six Touring Car with Lewis Engine, $1285.

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Activities of Prominent Men of the Industry

Resignations, Promotions and Other Changes in Personnel of Motor Vehicle Manufacturing and Merchandising Companies and Allied Businesses

M. H. Needham is associated with the Barrett-Cravens Co., manufacturers of the Barrett Multitruck, time clocks and other factory equipment. He was formerly general manager and treasurer of the Bailey non-stall differential corporation.

W. G. E. Birkett has been appointed advertising manager of the Standard-Detroit Tractor Co. of Detroit, manufacturers of the "Trackford" plowing attachment for Ford cars. He will have his headquarters at the offices of the factory, 1506 Fort street, West Detroit, Mich. He was formerly advertising manager of the Gray Motor Co. and the Hoskins Manufacturing Co.

E. G. Soward has resigned his position as pleasure car sales manager for the Nash Motors Co., Kenosha, Wis. He was

B. C. Dowse, Head of Newly Formed Dowse Rubber Co., Which Will Have Headquarters in Chicago.

with the Thomas B. Jeffery Co. for many years in charge of pleasure car sales. Mr. Soward intends to start in business for himself.

F. C. Cutler is now secretary and sales manager of the Worcester Stamped Metal Co. of Worcester, Mass. Mr. Cutler is well known to buyers of sheet metal stampings. He was formerly manager of the Worcester Pressed Steel Co.

John Lottridge has resigned as manager of the Cuyler-Lee organization in San Francisco, Cal.

M. L. Alfont, formerly with the Hudson, Haynes and National companies, has been appointed superintendent of the factory of the Jones Motor Car Co., Wichita, Kan. Charles E. Becker has taken charge of the company's advertising and publicity department.

George E. LeVietes has become manufacturers' representative for the Osgood Lens and Supply Co., Chicago. His headquarters are at 73 Warren street, New York City. He was formerly purchaser for the E. J. Willis Co. He is well acquainted with the parts and accessories trade.

James P. Hunting has joined the MacAvoy Advertising Co. of Chicago. He has opened an office at 1305 Union National Bank building, Cleveland. He was formerly of Singleton-Hunting Co., advertising agents.

W. H. Chaffe has been appointed superintendent of the plant of the Chevrolet Motor Co., in Flint, Mich. He was superintendent for the company at Tarrytown, N. Y.

Max X. Chuse has become secretary of the Peoria District Fair Association, succeeding Walter O. Ireland, who has resigned. Mr. Chuse was vice president of the Cadillac company.

B. C. Dowse, formerly president and general manager of the Federal Rubber Mfg. Co. of Milwaukee, and some of his associates, have formed the Dowse Rubber Co., with an authorized capital stock of $2,500,000, of which $1,000,000 is cumulative seven per cent. preferred stock and $1,500,000 common stock.

G. Franklyn Burger has resigned his position as sales and advertising manager of the Vincent Clear-Room Steering Wheel Co., Detroit.

Lyman E. Towne, Denver, has been appointed sales manager of the Miller Rubber Co. of Nebraska, with headquarters in Omaha, and Nebraska and Western Iowa as territory. He has been salesman several years for the National Rubber Supply Co., Denver, of which the Omaha concern is a new branch.

George E. Drawe has been appointed assistant general manager of the Mutual Motors Co., Jackson, Mich. He was formerly connected with the Allen Motor Company, Fostoria, O.

Arthur Cavaney is now manager of the E. R. Bacon Co., Los Angeles, Cal., distributor of the Sterling trucks and dealers in contractors' equipment. He was formerly manager of the sales department of the Ford Motor Co.

M. J. Monson has retired as manager of the Buick Motor Co., Milwaukee, Wis., to go into business for himself. He was for the last four years manager of the Milwaukee Buick branch. In his new connection he will be in the retail trade of Milwaukee.

A. C. Hyser, formerly manager of Atlanta branch for the Willard Storage Battery Co., has been appointed service manager for the Willard company. He will have his headquarters at the home office in Cleveland.

H. R. Cooley has been appointed sales manager of the Mutual Motors Co., Jackson, Mich. He was formerly with the Jackson Automobile Co., and latterly with the Lewis Spring and Axle Co., Chelsea, Mich.

Charles D. Jenney has perfected the application of a new principle which successfully uses kerosene for fuel in internal combustion engines. He is the head of the Jenney Electric Manufacturing Co., and was recently appointed chief consulting engineer for the Detroit Motor Lock Co., makers of the Detroit Cartridge Lock.

J. W. Crawford, formerly assistant chief engineer of the American Motors Co., and for the past four years connected with the Chalmers Motor Co., has been appointed designing engineer of the latter concern.

Charles D. Jenney, Chief Consulting Engineer of the Detroit Motor Lock Co.

Albert Champion, during the Boston show, gave a dinner to about 150 of the leading jobbers and salesmen of New England. Mr. Champion is the president of the Champion Ignition Co., Flint, Mich.

Elmer F. Twyman, Jr., has been elected vice president, treasurer and general manager of sales of the E. R. Taylor Corp. The company are the sole distributors of Gramm-Bernstein motor trucks in 12 eastern states. Mr. Twyman was manager of the Boston branch of the company. He has been succeeded by E. E. Mears.

A. E. Walden has returned to the Chalmers company in the capacity of experimental engineer. He was formerly service manager of the C. T. Silver Co., New York.

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Congressman Alvan T. Fuller of Massachusetts (X) Departing for War Session, Presented by His Employees with a Statue of Winged Victory at the Packard Boston Headquarters.

HAPPENINGS AMONG THE CAR AND PARTS MAKERS

The Packard Motor Car Co., distributor of Boston, Alvan T. Fuller, who was elected to Congress last November, was given a great ovation by his several hundred employees when he left to take his seat in the new Congress April 2. The employees presented him with a statue of Winged Victory.

The Moreland Motor Co. has acquired a site at Burbank, a suburb of Los Angeles, Cal., and will commence construction work in the near future on a building to cost $150,000, which will be the first unit in a plant to cost about $1,000,000. It is also announced that in addition to the company's product for commercial uses a pleasure car model will be turned out. The new car will be a light model and will be equipped to utilize distillate as a fuel.

The E. A. Laboratories, Inc., New York City, has purchased the business patents, trade marks and good will of the Automobile Supply Mfg. Co., makers of Newtone automobile horns. The latter company's plant has been sold to Louis Leavitt, a Brooklyn paint manufacturer.

The Grant Motor Car Co., Cleveland, O., has filed plans in that city for a new plant to be erected on a site south of the New York Central tracks, at Kirby and Coit roads. The present plant is north of the New York Central tracks at the same point. The new plant will consist of two large buildings, one averaging 647x160 feet, another 400x160 feet and a third, which will be a two-story office structure, 60x40 feet.

The Jackson Automobile Co. has appointed the following agencies as distributors of Jackson cars: O. A. White, Aguiler, Col.; Morris Smith, Valley, N. M.; Valley Merc. Co., Sidney, Col.; W. A. Snider, Bowling Green, O.; Standard Garage, Toledo, O.; R. J. Welton and Frank Voris, Greely, Col.

The Vital Mfg. Co. is the new name of the Bigsby Rotary Mfg. Co. of Cleveland, O., manufacturers of "Protecto" spark plugs, and the Vital automatic cleaner.

The Maxwell Motor Car Co., Detroit, Mich., is planning the erection of an entirely new plant in that city and a new administration building.

The Kissel Motor Car Co., Hartford, Wis., has appointed the following agencies as distributors of Kissel Kars: Anderson Auto Co., Muskogee, Okla.; Amsler & Co., McGregor, Tex.; Sampson & Freberg, Bricelyn, Minn.; L. E. Sprowl, Melette, S. D.; H. E. Miller, Longmont, Col.; B. H. Jacobs, Healdsburg, Cal.; A. M. Smith, 2232 Chester avenue, Bakersfield, Cal.; G. E. Willis, South Manchester, Conn.; F. H. Inglehart, Belair, Md.; Mar-Pen-Vir Mobile Co., Hagerstown, Md.; Crescent Auto Co., Tarentum, Penn.

The Prest-O-Lite Co., Inc., has appointed the following battery service stations: City Garage, Adrian, Mich.; G. G. Hadlock, Lucas, Kan.; Phillips Hardware Co., Cambridge, Md.; Manley Bros., Brattlesboro, Vt.; Charleston Welding Works, Charleston, S. C.; J. E. Barry, Henry, Ill.; Roy Moorman Service System, El Centro, Cal.; Central Electric Co., 128 S. Main street, South Bend, Ind.; Schlageter & Meacham, Streator, Ill.; Electro Mechanical Specialty Co., 247 S. Broadway, Yonkers, N. Y.; Mitchell Battery and Tire Co., 217 W. First avenue, Mitchell, S. D.; I. G. Dillon, 200 Rock Island street, E. Reno, Okla.; Geo. A. Bees, Marshalltown, Ia.; Hogeboom & Thompson, 1214 S. Main street, Goodland, Kan.; Ed. Foust, Marion, Ind.; Northwest Garage, Cherokee, Ia.; Ream Garage, Broken Bow, Neb.; Emenaker Elec. Co., 121 W. La Porte street, Plymouth, Ind.; Washtenaw Electric Shop, Inc., 200 East Washington street, Ann Arbor, Mich.; Obye & Safley, Rockwell City, Ia.; The Battery Service Station, 56 River street, Elgin, Ill.; Charles F. Schafer, 114 E. Third street, Alliance, Neb.; Rummell's Garage and Auto Service Co., 117-19 Sandusky street, Findlay, O.

The Maxwell Motor Car Co., Detroit, Mich., has offered $5000 in cash prizes to be distributed among dealers, together with the award of the National Maxwell Economy Championship Cup. The contest will be held on May 23. The contesting dealers are required to arrange with owners for the use of two Maxwell five-passenger touring cars. These cars, which are to be borrowed for the day, will be fitted with two one-gallon gasoline tanks attached to the windshield. The cars will make the run together, each carrying four passengers, including the driver and three official observers. The observers will attach their signatures to the affidavits that are rendered of each test. The first prize will be $200 in gold; second, $150; third, fourth and fifth, $100 each; sixth and seventh prizes, $75 each; eighth, ninth and 10th, $50 each.

The Brown-Hare-Parsons Co., 580 Woodward avenue, Detroit, Mich., have been appointed distributors for Disco two-unit starting and lighting systems in Michigan and several other states.

The Clark Equipment Co., Buchanan, Mich., has started work on a new wheel shop, which will increase the present wheel capacity approximately 50 per cent. The new building will be 180 feet long by 60 feet wide and will be equipped with the most modern machines for production of steel wheels for motor trucks.

The Timken-Detroit Axle Co. and Timken Roller Bearing Co. will on May 1 move their Chicago office, now located at 1335 People's Gas building, to suite No. 1843 People's Gas building.

The Pierce-Arrow Motor Car Co., Buffalo, N. Y., directorate at the annual meeting last week elected W. J. Foss, commercial manager since 1915, second vice president. He will continue in charge of all the company's selling activities. Charles J. Clifton was re-elected president; Henry May, vice president; L. H. Gardner, secretary, and W. C. Wrye, treasurer.

The Southwestern Tire and Rubber Mfg. Co., Dallas, Tex., has been organized with a capital of $250,000 and will erect a plant in that city costing approximately $80,000. The officers of the company are: President, R. L. Cameron; vice presidents, W. W. Taxis and L. G. Murray; secretary, W. E. Suttles; treasurer, J. G. Gillespie.

The Springfield Body Corp.'s new plant at Detroit, Mich., will be equipped throughout with motor driven machinery. The building will soon be finished and a force of 500 men will handle the production, which will turn out one Springfield type body every 20 minutes.

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A. C. Spark Plug Dinner, Given at the Boston Show, with Albert Champion as Host.

The Darling Motor Co., Dayton, O., has purchased the plant of the Wright-Martin Aeroplane Co. The company was recently organized to make a new pleasure car, designed by James Guthrie. The chassis has a 130-inch wheelbase and is equipped with a model 7-N Continental, six-cylinder engine, 3½x5¼; Timken axles, Borg and Beck disc clutch, Stromberg carburetor, Bijur starting and lighting, Kellog tire pump, Atwater Kent ignition, Stewart vacuum feed, Conaphore lenses, Boyce motometer, demountable wire wheels.

The Lapeer Traction Co., Lapeer, Mich., has been organized and will make a tractor. The officers of the company are: President, W. H. Tucker; vice president, Thomas White; secretary, E. E. Mix; treasurer, Ray Carpenter.

The Vacuum Oil Co., Rochester, N. Y., earned during 1916 $9,221,937, an increase of $2,360,000 over 1915, and 61.4 per cent. on its capital stock. The company has declared a dividend of three per cent., with an extra dividend of two per cent., payable May 15.

The Auto Parts Co., Chicago, Ill., has been granted a perpetual injunction against the Auto Sales and Parts Co., also of that city, enjoining the latter from using a name similar to the plaintiff's defendant's name, which it is set forth resulted in a business loss. Since the suit was started the Auto Sales and Parts Co. changed its name to the Auto Needs Co., and under that name has taken an appeal from the decision of Judge Charles M. Foell of the Superior Court of Cook county, who presided at the trial.

The Dort Motor Car Co., Flint, Mich., has increased its capital stock to $1,500,000. It was formerly capitalized for $500,000.

The Parker Rust Proof Co. of America, Detroit, Mich., will erect branch factories in most of the large cities of the United States. Two factories will be erected in each of the following cities: New York City, Chicago, Brooklyn and Philadelphia. One plant will be built in each of these cities: Buffalo, Syracuse, Pittsburg, Altoona, Penn.; Boston, Worcester, Hartford, Bridgeport, Providence, Newark, Baltimore, Milwaukee, Indianapolis, St. Louis, Minneapolis, St. Paul, San Francisco, Kansas City and the following Ohio cities: Cleveland, Cincinnati, Columbus. The Cleveland plant has been in operation for some time.

The Prest-O-Lite Co., Inc., has appointed the following individuals and concerns as official battery service stations: B. L. Mitchell, 714 Main street, Neenah, Wis.; Sheldon Auto Co., Sheldon, Ia.; C. E. Gates Auto Co., Inc., Riverside and Main streets, Wedford, Ore.; Pioneer Motor Co., 160 E. Colorado street, Pasadena, Cal.; F. C. Nash, Lake Mills, Ia.; Algona Auto and Machine Co., Algona, Mich.; Redlands Ignition and Battery Co., 22 W. Citrus avenue, Redlands, Cal.; The Electric Shop, Greenfield, Ind.; Farmers Auto and Machinery Co., 804-814 E. Midland street, Bay City, Mich.; Zamboni & Sons, 301-3-5 W. Cedar street, Owatonna, Minn.; J. Leo Johnson, Harwick, Vt.; A. G. Crawford, Mercedes, Tex.; Huber Fireproof Garage, 211 N. Main street, Dayton, O.; Electric Specialty Co., Fairbault, Minn.; Jackson Auto Co., Jackson, Mo.; Patterson & Ingalls, Dexter avenue, Montgomery, Ala.; Guilford Motor Car Co., 105-7-9 S. Cavie, Greenboro, N. C.

Valentine & Co., makers of Valentine's varnishes and colors, have issued a highly colored automobile poster in seven colors. It is a striking design, showing a number of manikin painters putting a coat of scarlet on an old car. The color scheme is very attractive to the eye and compels attention.

The Olds Motor Works has announced the commencement of extensive improvements to the 40-acre plot of ground surrounding its large plant, in connection with which the employees' welfare work of the company will be developed along outdoor recreational lines. Plans call for the parking of the large tract of land, the aim being to secure beautiful horticultural effect through the medium of fine lawns, flower beds and shrubbery. A fine grove of trees at the western end of the tract will be improved, and, with the addition of rustic benches, tables and summer houses, converted into picnic grounds for employees. Other welfare features will include a baseball diamond, with grandstands and tennis courts. The baseball diamond will be located in the middle of the half-mile testing track.

The Inter-State Motor Co., Muncie, Ind., has not purchased the Beaver Mfg. Co. of Milwaukee, Wis., as recently reported, but has made arrangements to take over the entire output of the Beaver company for the coming year.

The Bosch Magneto Co., New York, have signed nine contracts with the following prominent automobile and truck makers to use Bosch magnetos during the coming season. Finley Robertson Porter Co., Inc., Port Jefferson, L. I.; Bethlehem Motors Corp., Allentown, Penn.; Larrabee-Deyo Motor Truck Co., Binghamton, N. Y.; Brewster & Co., Long Island City, N. Y.; Roberts Motor Mfg. Co., Sandusky, O.; Kleiber & Co., San Francisco, Cal.; The Winton Co., Cleveland, O.; Jordan Motor Car Co., Cleveland, O.; Sterling Automobile Mfg. Co., Amston, Conn.

The Champion Ignition Co., Flint, Mich., maker of AC spark plugs, now has ready for the market what it terms an aviation plug, but which is suitable for use on both aviation and racing motors. The company will add another story to its plant. This will increase the floor space 10,000 square feet and it is the third addition in 18 months.

The Hayes Wheel Co., Anderson, Ind., has placed an order for $10,000 worth of machinery for its plant. The company expects to manufacture from 1200 to 1500 sets of Ford automobile wheels daily when the machinery is installed.

The Gas Tank Recharging Co., Milwaukee, Wis., will build a new plant in Layton Park, in the southwestern part of the city. The building will be of fireproof construction, two stories and basement, 35 by 100 feet.

The Gillette Motors Co., Mishawaka, Ind., is considering plans for an addition to its plant. The new building is to be of brick, 200 by 50 feet. The company is now testing out its Wilmo motor.

The Evinrude Motor Co., Milwaukee, Wis., is planning an addition to cost $25,000. The company recently entered the tractor motor field.

The Biggam Trailer Corp., Owosso, Mich., has purchased a factory building and will manufacture automobile trailers.

The Security Tube Co. has been organized with $50,000 capital, to manufacture automobile accessories.

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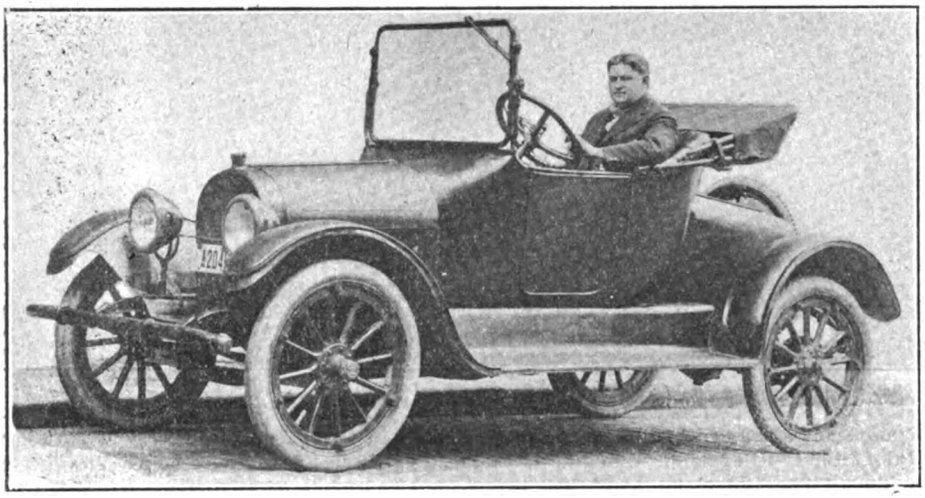
An Automobile Made from Many



H. G. Gremel, Manager of Puritan Machine Co., in Orphan Car Composite.

H. G. Gremel, general manager of the Puritan Machine Co., Detroit, Mich., is the possessor of an automobile which defies a single identity and is undoubtedly the most unique in existence.

As is well known, the Puritan company foster the orphaned parts of nearly 100 different makes of cars whose manufacturers have gone out of existence. With all these parts Mr. Gremel decided to construct a car for himself which would be made up of parts taken from as many different makes of car as possible, with the result that he managed to incorporate parts from some 102 different orphan cars. The steering gear was originally intended for one make of car, the gearset for another, an axle that should have done duty in a third, wheels that were meant for another kind. All the other parts were also selected from machines that were not represented in the construction in any other part. On the finished chassis he placed a Krit body. This heterogenous assembly would seem to be anything but practical, but the car is very serviceable and has been driven by the owner over 15,000 miles. It is a strong illustration of the value of the standardization that has been going on among car and parts manufacturers during the past few years.

JOSEPH N. SMITH & CO. ENLARGE THEIR PLANT.

The Joseph N. Smith & Co. plant at East Grand boulevard and DuBois street, Detroit, Mich., comprises over 77,000 square feet of floor space, which is devoted to the manufacture of automobile body hardware.

All the buildings are so constructed as to give the best possible facilities for manufacturing operations and have been arranged to give every unit and department an individual space, eliminating unnecessary handling of goods from the time the raw material enters the plant until the finished product reaches the shipping department.

The plant includes a complete brass foundry, japanning department, tumbling department, polishing department, grinding department, heat treating department, press department, windshield department, plating department, molding department, tool room, machine room, assembly room and a large stock warehouse and shipping room.

In the old factory the company employed 350 persons, but this number will be increased as the new plant provides additional facilities for more than doubling the company's output.

Joseph N. Smith founded the business in 1875 and conducted it as a private enterprise until 1899, when the Joseph N. Smith & Co. was incorporated with a capital of $25,000. In 1905 the capital was increased to $100,000 and this year to $500,000.

The officers of the company are: President and general manager, E. L. Ackerman; vice president, James Shand; secretary and treasurer, C. E. Blaesser; factory manager, C. E. Chamberlin; sales manager, C. T. Fezzey; purchasing agent, A. MacCordquodale; superintendent, G. S. Decker.

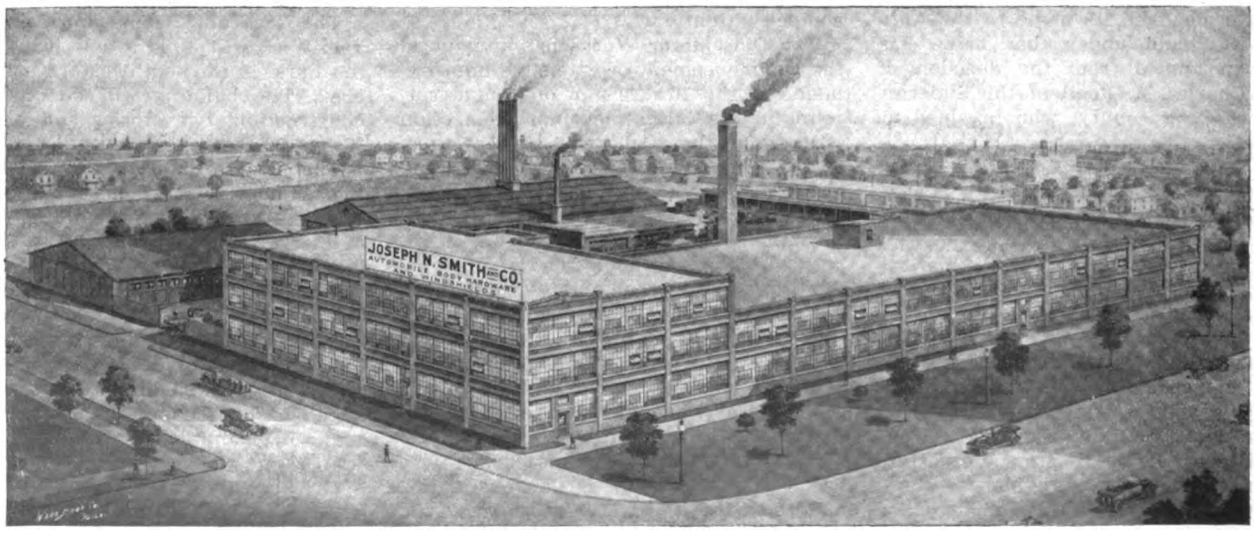
GEAR MANUFACTURERS FORM ORGANIZATION.

At a meeting of a large number of gear manufacturers, held at Lakewood, N. J., on March 25 and 27, a permanent organization was formed to be known as the American Gear Manufacturers' Association. A second meeting will be held at Pittsburg on May 14 and 15.

The association was formed for the purpose of advancing and improving the gear industry in a general way by standardization of gear design, manufacture and application.

The executive committee is composed of the following men: F. W. Sinram, Van Dorn & Dutton Co., Cleveland, O.; H. E. Eberhardt, Newark Gear Cutting Machine Co., Newark, N. J.; F. D. Hamlin, Earle Gear and Machine Co., Philadelphia, Penn.; Frank Horsburg, Horsburg & Scott, Cleveland, O.; Biddle Arthur, Simons Mfg. Co., Pittsburg, Penn.; George L. Markland, Philadelphia Gear Works, Philadelphia, Penn.; Milton Rupert, R. D. Nuttall Co., Pittsburg, Pa.

Officers were elected as follows: President, F. W. Sinram; vice president, H. E. Eberhardt; secretary, F. D. Hamlin; treasurer, Frank Horsburg.



New Plant of Joseph N. Smith & Co., Body Hardware Manufacturers, Detroit, Mich.

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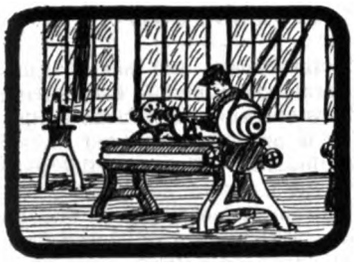
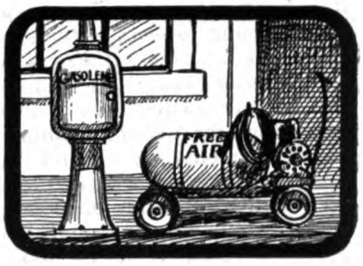


GARAGE EQUIPMENT



TAIL STOCK TURRET.

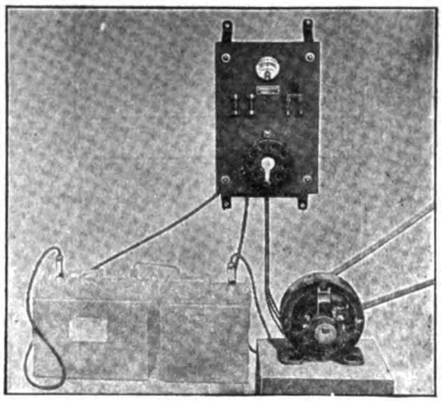
Illustrated in the picture is a device which needs no explanation. The garage or repair shop man will immediately see the many advantages derived from this tool, its efficiency and utility. As the name indicates, it is a turret designed for application to the tail stock of any ordinary screw cutting lathe. When applied in this manner the efficiency and scope of the lathe is immediately greatly increased. It becomes a turret lathe and screw machine. The tail stock turret accommodates five distinct and separate tools and is attached in a few seconds to the outside of the sleeve of the tail stock. The second illustration shows the application of this tool, together with an adjustable tool post turret. This second device is designed for application on the tool post, and accommodates four tools. Both devices have quick adjustment features, permitting ready operation and use of any of the tools in a second's time.

Manufactured by the Newman Mfg. Co., Cincinnati, O. Send for catalogue and prices.

ATLAS ARBOR PRESSES.

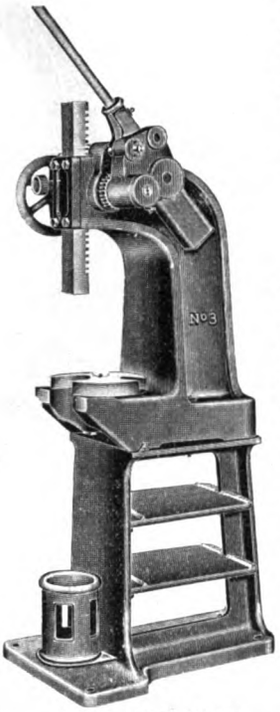
Atlas arbor presses are built in all sizes with the idea of producing a tool for all kinds of service requiring pressure up to 25 tons and centering capacity up to 38 inches. The press illustrated, No. 3, is equipped with the Eames Patent Compound device, by means of which enormous power is obtained and either simple or compound leverage is instantly accessible for use. This press will take work up to 18 inches over table in length and 20½ inches in diameter. It makes a very handy machine tool for garages or repair shops which have calls for bearing or bushing replacements.

Manufactured by Atlas Press Co., 323 N. Park St., Kalamazoo, Mich. Write for catalogue and prices.



Main Battery Charger.

Lipman Air Service Station.



Atlas Arbor Press.

LIPMAN AIR SERVICE STATION.

This is a tire filling station complete for the curb or driveway of a garage or repair shop. It consists of a stand surmounted by an opalescent electric light globe enclosed. In the base is a Lipman four-cylinder, water cooled air compressor, connected through enclosed gearing with a one-quarter horsepower General Electric motor, which is furnished for any standard voltage the customer may require. It is automatic in action. When the door is opened the motor starts and when the door is closed the motor stops. Air is furnished through a 28-foot length of hose, which is fitted with patented pressure control valve and a gauge which indicates correct tire pressure. In addition to the light at the top there is a light in the hose compartment which is turned on and off by the door action. Both the hose and pump compartment are provided with lock and keys.

Manufactured by Lipman Air Appliance Co., Beloit, Wis. Prices upon request.

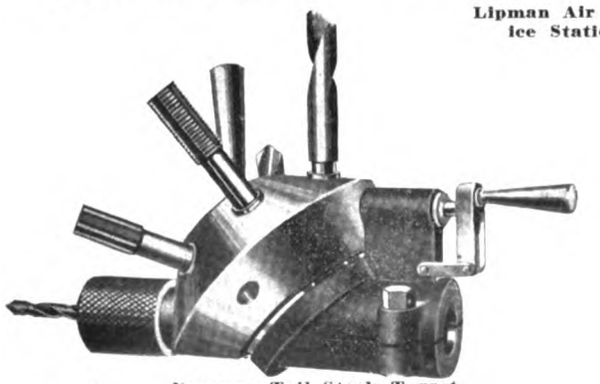
GUARANTEE GASOLINE PUMP.

This is a motor operated gasoline pump of an improved design. Gasoline is forced by an electric motor driven vacuum system into a glass container, which is mounted on a level with the eyes. This container is graduated and the amount of gasoline in it is visible. The gasoline is carried through a tube to the automobile. With this type of pump full measure is assured, and the buyer is sure to get full measure.

Manufactured by Guarantee Liquid Measure Co., Rochester, N. Y. Prices upon application.

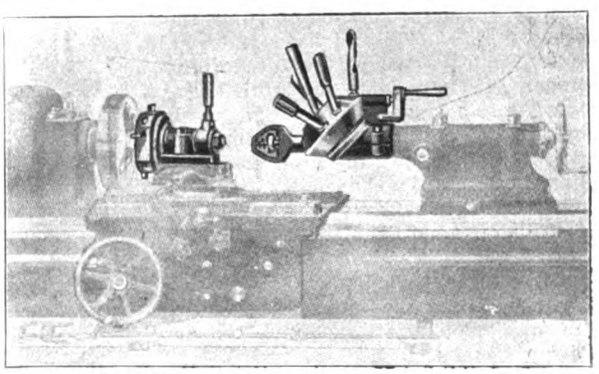
MAIN BATTERY CHARGER.

The Main Battery charging set, designed for public and private garages, is designed for use with any power drive.



Newman Tail Stock Turret.

Guarantee Gasoline Pump.



Newman Tool Post Turret, Together with Tail Stock Turret.

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It consists of a dynamo or generator, shunt wound especially for storage battery work with liberal size commutators and brushes which are self-lubricating, and a slate switchboard. The switchboard contains a double reading ammeter of the D'Arsonal type, switch, fuses, field regulating rheostat and two leads of battery wire with spring clips for snapping on to terminals. Any number of six-volt batteries, from one to five, can be charged at one time; or two six-volt and one 18-volt; or one six and two 12-volt; or any voltage from two to 30 volts.

Distributed by Pittsburg Auto Equipment Co., Pittsburg, Penn. Price complete, $55.

THREE TANK OIL UNIT.

Gasoline services have been highly developed in the past few years. The same is true of methods for dispensing oil. Our illustration shows what is called a three tank unit. This unit consists of three 12-gallon oil tanks, fitted with specially designed measuring pumps mounted on a frame and suspended on roller bearing wheels.

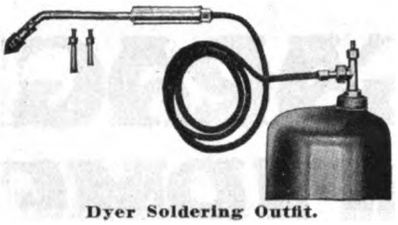
In each tank near the bottom is placed a self-measuring pump, the cylinder of which is cast iron, reamed true and fitted with the piston, also of cast iron, which is provided with one semi-steel rim. The piston travels to the bottom of the cylinder on the down stroke and against an adjusting screw on the up stroke. By setting this screw up or down the stroke is adjusted so that the pump can be accurately set to pump exactly one pint and kept so. All three pumps are mounted on one base, which is readily removed, affording easy access to the interior of the tanks for cleaning. The three units make it possible to carry at one time three different grades of oil suitable to different types of cars. With this unit the objections to the old "quart can" method of oil filling are eliminated. The oil is furnished through flexible tubes and cannot slop over on to the car or ground.

Manufactured by United Engine and Manufacturing Co., Hanover, Penn. Prices upon application.

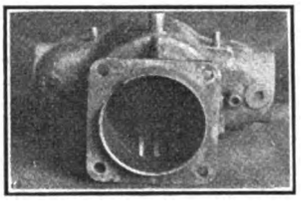
SCORED CYLINDERS.

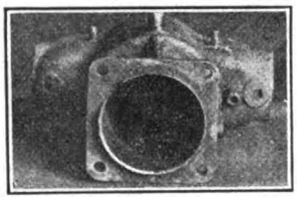
That it is possible to repair scored cylinders without grinding is the claim of the New Chemical Process Co., who do this work by a new method of filling the scores with a nickel and hard material, and smoothing down to the face of the cylinder. Besides doing the work themselves this company market an outfit consisting of an iron for applying the nickel and silver into the grooves of the cylinder, a scraper shaped so as to fit concentric and flush with the surface of the cylinder, a bottle of suitable flux, a special file and enough material to repair from five to seven cylinders. With this outfit they claim that any ordinarily intelligent person can accomplish the art in a few hours time.

Manufactured by New Chemical Process Co., 6 West Ross St., Wilkes-Barre, Penn. Price for outfit, $10.

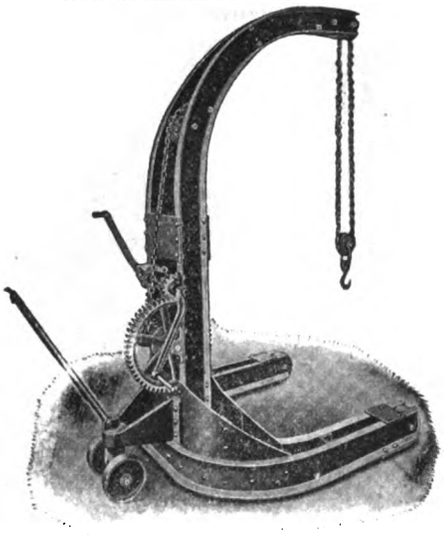


Dyer Soldering Outfit.

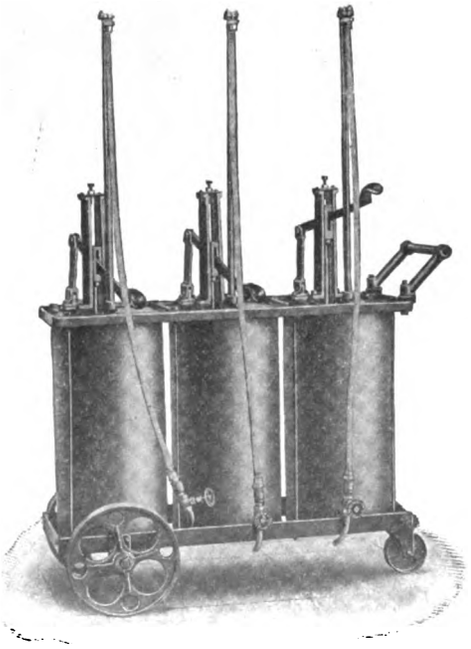




Illustrating Cylinders Before and After Being Treated by New Chemical Process Method.



Lafayette Steel Crane.



Three Tank Oil Unit.

SOLDERING OUTFIT.

A very interesting and handy utility tool for garages, automobile and radiator repair shops and service stations is illustrated. It is primarily intended for soldering or brazing. The essential parts are, acetylene gas tank connection, flexible tubine and a soldering or braising torch iron. Either open or closed flame tips may be used, or a standard soldering copper; fittings being interchangeable. Special tips for radiator work may also be obtained. When used with an acetylene tank, a continuously heated iron is obtained. On account of its many uses this tool should be an attractive proposition for practically any line of repair work.

Manufactured by the G. H. Dyer Co., Cambridge, Mass. Prices upon application.

LAFAYETTE STEEL CRANE.

The Lafayette portable steel cranes are built in three sizes, having lifting capacities of 3000, 4000 and 5000 pounds, and consist primarily of a jib mounted on a horseshoe base, the jibs having an overhang of 30, 36 and 42 inches respectively. The bases are mounted on double wheel casters and wheels at the ends, and on these the jibs are built. There are two locks for the winch, which is compounded, so that it is absolutely safe for any work. There is a hand lever attached to the caster, with which the crane may be readily moved and placed wherever wanted.

The crane is designed to lift the ends of the heaviest cars for work beneath them, removing or putting on tires, taking out or installing engines, or any similar work for which jacks and pits are now used.

Manufactured by the Lafayette Engineering Co., Lafayette, Ind. Prices for the three sizes as follows: $70, $85 and $100 for 3000, 4000 and 5000 pounds respectively.

JIFFY-JAX TIRE SAVERS.

To save the tires from the rotting effect of oil and water and grease which accumulates on a garage floor, it is necessary to jack the car up if they are to stand for any length of time, and for that purpose these Jiffy Jax tire savers have been brought out. They are made of steel and consist of a sliding lifter, which is operated through an offset handle of generous length by a toggle link arrangement. The leverage is such that only a slight effort is required to exert a lifting effort of 1000 pounds, and the jacks stay in the lifted position without further attention. They are adjustable for most any size wheel with a range from 13½ inches to 18⅝ inches. They are furnished four to a set, one for each wheel. The steel saddle is fitted with a solid leather cushion so as not to mar the finish at the point of contact. Capacity of one jack is given at one ton.

Made by the Jiffy Jax Company, Cleveland, O. Price upon application.

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TIRE FILLING STATION.

To get the best results from a tire proper inflation is necessary. With this in mind the Curtis Pneumatic Machinery Co. are marketing an air tire filling station which is designed to overcome such evils as over or under inflated tires.

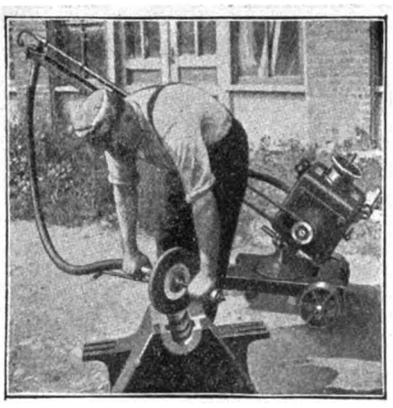
With the Curtis tire filling station, the dial is turned to the mark indicating the size of tire which is to be filled, and the correct pressure is furnished to the tire, regardless of the pressure carried in the storage tank. The equipment consists of "Free Air" sign, 25 watt tungsten lamp and transparent night sign on top, 30 feet of oil proof air hose with automatic tire chuck, all ready for connection to air supply. A practical equipment for every garage.

Manufactured by Curtis Pneumatic Machinery Co., 30 Church St., New York City. Price, $135.

STOW FLEXIBLE GRINDER.

The Stow flexible grinder is used in shops where it is more convenient to bring the grinder to the work than vice versa. The motor is mounted on a truck and equipped with a swivel joint, making it adjustable to the proper angle for all purposes and to meet all grinding conditions. The weight of the flexible shaft is taken off the operator by an adjustable arm, which is long enough to enable him to work over a large area. The emery wheel on the driven end of the shaft may be interchanged with a scratch brush should the work demand. The D. C. equipment is provided with a plunger in the pole piece by which the speed may be varied to suit the size of emery wheel used. The A. C. equipment is not to be regulated, but is built in several sizes, according to the capacity of the emery wheels desired. Because of its many uses this tool should be an attractive proposition for any garage doing this class of work.

Manufactured by Stow Mfg. Co., Binghamton, N. Y. Prices and literature upon request.



Stow Flexible Grinder.

Johnson Adjustable Torch.

JOHNSON ADJUSTABLE TORCH.

The Johnson No. 8 adjustable torch, shown in the accompanying cut, is suitable for melting soft metals, heating soldering coppers and for light brazing, tempering, case hardening and annealing. The burner can be adjusted on the upright support so that it may be used under melting pots, or to throw the flame in any direction.

Manufactured by the Johnson Gas Appliance Co., Cedar Rapids, Ia. Price, $6.

WELDEX GASOLINE STORAGE.

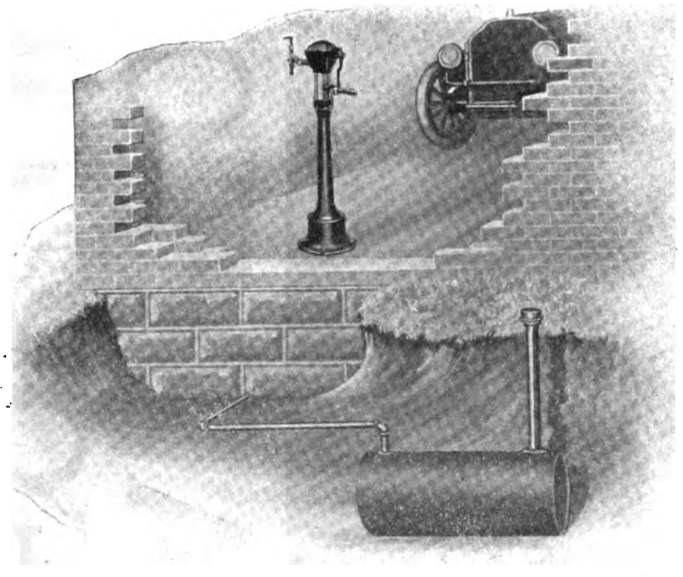
Our illustration shows the installation of the Weldex gasoline supply system. The tanks are constructed of a high grade of refined iron and all the joints are welded, no solder or rivets being used in their construction. The tank is designed to be buried in the ground outside or beneath the garage and may be obtained in sizes ranging from 65 gallons to 550 gallons. The pumps are of the rotary type and are operated by simply turning the crank on the side. The advantages claimed for this system are that it saves gasoline, protects it from atmospheric changes and keeps it safe so far as fire is concerned.

Manufactured by the Weldex Mfg. Co., Richmond, Ind. Write for prices.

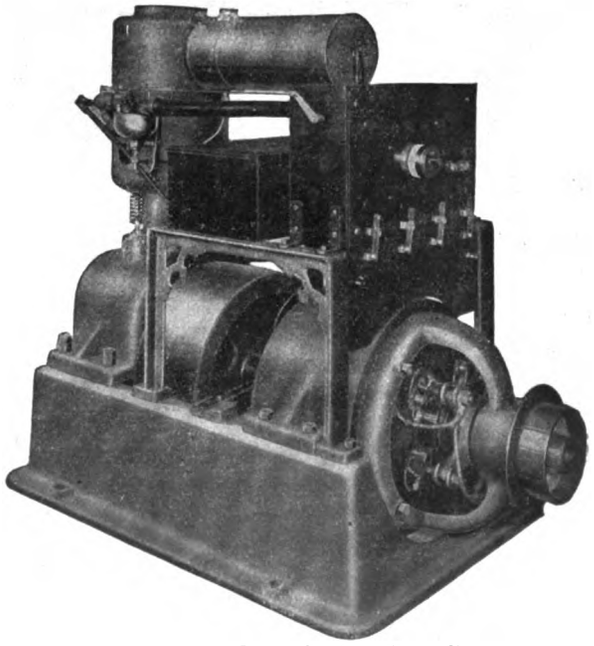
THE JONES SYSTEM.

The Jones System Type B is particularly adapted for generating electricity for garage work, where it is not practical or possible to use current from outside sources. It consists essentially of a one-cylinder, four-cycle gasoline engine, which has a side crank mounted on the same shaft upon which the armature of an electric generator is mounted. Two large and renewable bronze bearings carry this shaft. The engine is three inch bore, 4½ inch stroke, and its speed on light load is 725 to 750 revolutions, from which point it gradually increases to 900 to 950 at full load. The plant is normally rated at 750 watts D. C. at 32 volts. The whole plant is mounted on one base and weighs but 750 pounds crated. The generator is self-regulating and the voltage is kept constantly at 32 volts.

Manufactured by the L. B. Jones Co., Kansas City, Mo. Prices and literature upon request.



Weldex Gasoline Storage Outfit.



Jones System Type B.

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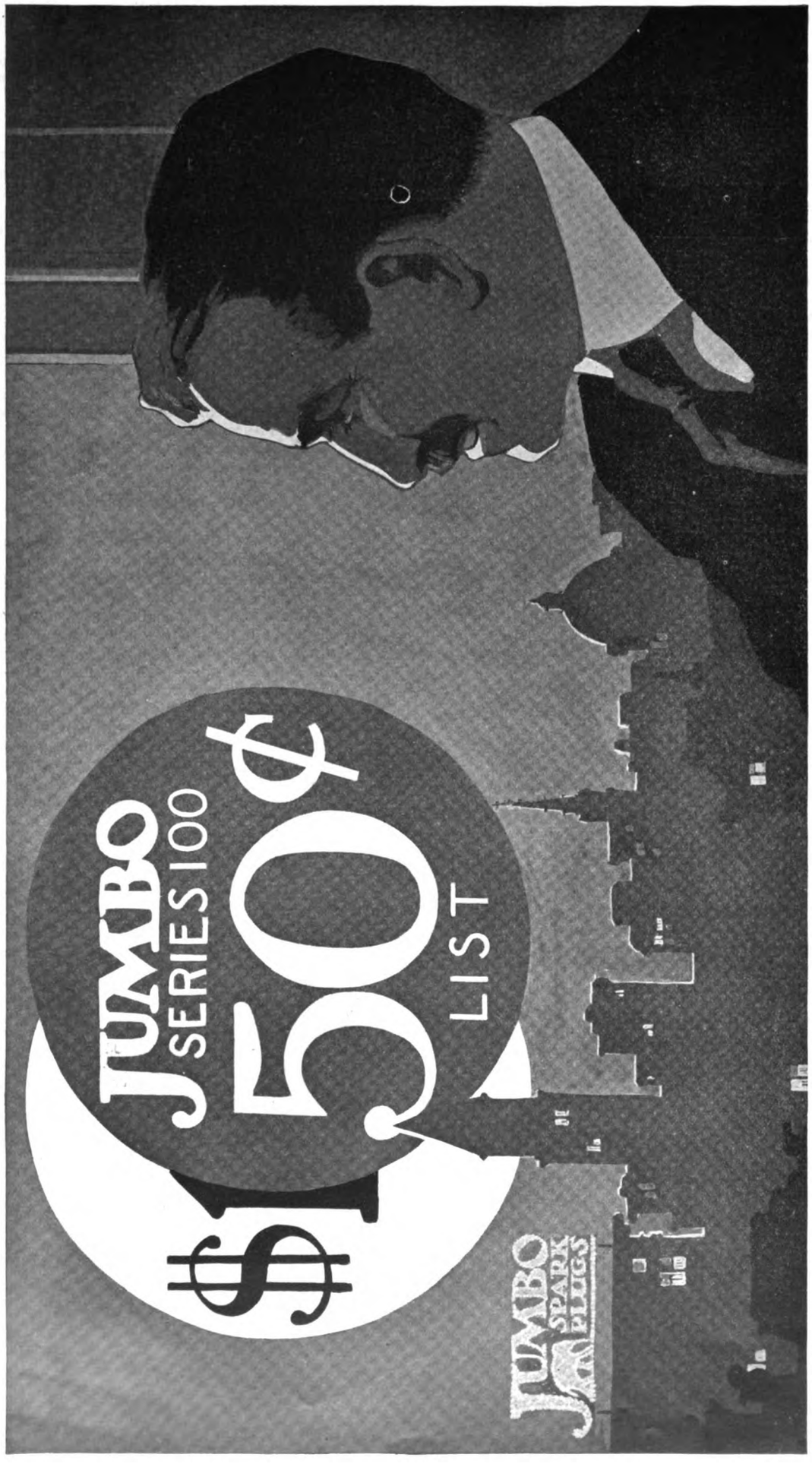

A TOTAL ECLIPSE FOR OLD PRICE-SCALES

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(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

VOLUME production has revolutionized the automobile industry—has made it possible for the manufacturer to effect almost miraculous economies—and has thus enabled him to ***sell more car*** for ***less money***. Volume production has come into the spark plug field, too—and come to stay. That is the reason for the new list price on

FORD SIZE: 45 CENTS LIST

JUMBO SPARK PLUGS

SERIES 100: 50 CENTS LIST

The volume of business literally forced upon us by the sheer merit of Jumbo Spark Plugs, has made it imperative for us to manufacture them on a scale which enables us to take every advantage of the economies found in mass production.

Costs have come down—and down. Quality, always of the highest, has risen higher—and yet higher. This means

BETTER BUSINESS FOR THE DEALER

You, who make your bread and butter by selling motor car accessories, *stop and think! Think* of a spark plug of *guaranteed quality*—at a list price that is drawing consumer trade like a *magnet*—backed by a big, broad-gauged campaign of *national advertising! You* know, and *we* know, that it means a "turnover" for you at least ten times as rapid as the best you've known before.

Your opportunity is *here*—reach out and take it! Your jobber already has his stock of Jumbo Spark Plugs, or can get them from our nearest branch. Order *now*.

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GIBSON-HOLLISTER MANUFACTURING CO.

PACIFIC COAST BRANCH: Los Angeles, Cal.

FACTORY AND GENERAL SALES OFFICES: ***BOSTON, MASS.***

CENTRAL STATES BRANCH: St. Louis, Mo.

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GILL PISTON RING.

The Gill piston ring is of one-piece construction of the concentric type, and with a joint so constructed that it can be opened more than ⅛ inch without there being a direct opening through which oil or compression can pass. The construction of the joint eliminates the use of an extra part to close it. Each ring is made from an individual casting, the scale being left on the inside surface to insure a permanent tension. The joints are cut from the rough castings, and rings are ground with the joints closed, which insures it being a perfect circle when closed.

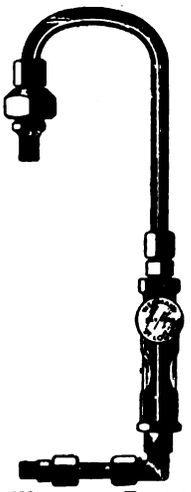
Marketed by Craig-Wyman Co., 93 Massachusetts Ave., Boston, Mass. Prices from $1 to $1.75 according to size.

Gill Piston Ring.

WEGMANN DECARBONIZER.

A decarbonizing device that will remove carbon from the cylinders and keep them free from carbon, will not only add great power to the engine, but will also save the owner much expense in fuel and repair bills. Such a device, known as the Wegmann automatic decarbonizer, is attached to the intake manifold and to the water supply pipe or water jacket and injects a fine spray of steam with the gas into the combustion chambers. When first applied the engine is allowed to race with the adjustment on the device wide open, permitting a small stream of water to pass into the combustion chambers, where it is turned to steam. It is claimed that all the carbon will have been removed in 15 minutes. The adjustment is then closed to a point where from 30 to 60 drops of water a minute are allowed to pass into the cylinders, which is the permanent adjustment and will keep carbon from forming within the engine. The device works automatically, opening when the engine is started and closing when it is stopped.

Manufactured by the Manufacturers' Distributing Co., St. Louis, Mo. Price, $5.



Wegmann Decarbonizer.

Reliable Fire Extinguisher.

RELIABLE FIRE EXTINGUISHER.

The Reliable fire extinguisher is adapted for use in all kinds of fires where the quick use of an extinguisher prevents great loss. It is simple in operation and is a non-conductor. The maker asserts that it will not explode or corrode and will throw a stream 30 feet. Its adaptability under all circumstances makes it efficient for extinguishing acetylene, electrical, gasoline, naphtha, oils and varnish fires in either private homes, factories, stores, warehouses, automobiles and motor boats. The extinguishers are made of hard brass in four sizes, as follows: Baby size, one pint, $7; auto size, two pints, $8; motor boat size, three pints, $8; large size, six pints, $12.

Manufactured by J. W. Stevens, Rosebank, N. Y., and distributed by Charles D. Durkee & Co., 2 and 3 South St., New York City.

Comer Auto-Stop Signal.

COMER AUTO-STOP SIGNAL.

The Comer Auto-Stop Signal combines the conventional rear signal light hanger for number plate and a semaphore arm set with opaque celluloid letters reading "Stop." This arm can be seen for a distance of 200 feet from the rear of the car and at night is illuminated with a bright light. The operation of the arm, which is the feature of the device, is automatic and does not depend upon any extra movements on the part of the operator of the vehicle. The instant the pressure is applied to the brake by the driver the semaphore signal is thrust out to right angles, flashing its signal, and when pressure on the break is released it is returned to its normal position.

Manufacturers Auto Signal Co., Chicago, Ill. Prices on application.

Special Tire Cover.

SPECIAL TIRE COVER.

This tire cover is made to fit tires on demountable rims carried on special holders. It is easily attached, being divided at the bead of the tire, permitting it to be formed to each side and fit smoothly and securely and protect the tire from oil, dampness, dirt and heat.

Made by the J. P. Gordon Co., Columbus, O. Prices from $1.60 to $3, according to size.

TWO NEW PREMIER PRODUCTS.

The Premier line of products, which are designed to meet every motorist's needs, has been expanded by the addition of Premier Spray and Premier Enamel Cleaner. The first named product is used either with a sprayer or a soft cloth and is intended to clean, polish and afford a lasting finish with a durable and bril-

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liant luster. Applied to a new car it keeps the factory finish, and applied to an old machine it revives the luster. It also can be used in the home or office, on furniture, floors, etc.

Premier Enamel Cleaner is applied with a soft cloth, it almost instantly removing dust, road oil and tar and other blemishes from all baked enamel surfaces, such as fenders, hoods, fillers, etc. The makers lay stress upon the economy of its use, the amount required being about half that of ordinary polishes. Premier products contain no acids, alkali or grit and are used by a great many of the largest manufacturers of high grade machines and also recommended by them to their dealers and users.

Manufactured by the United Chemical Co., Boston, Mass., and sold by most dealers. Prices sent upon request to the company.

PERRY AUTO LOCK.

A new method of locking automobiles is introduced by the Perry auto lock. This device is contained within the steering wheel spider on some cars, while on the Ford it is installed on top of the steering column housing. When the bolt is opened by the key, the steering wheel lifted about half an inch and the bolt pushed home again, the steering wheel is entirely disconnected from the steering post, making it impossible to tow the car away, as the front wheels run wild. The Perry lock is made for all cars and the manufacturers claim that it cannot be picked.

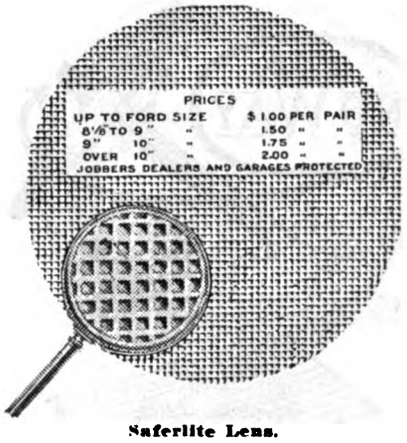
Manufactured by Perry Auto Lock Co., 1238 Michigan Ave., Chicago, Ill. Distributed by H. & H. Motor Specialties, Inc., 755 Boylston St., Boston, Mass. Price for Ford car lock, $5. Other prices upon request.

AUTOMOBILE GAUGES.

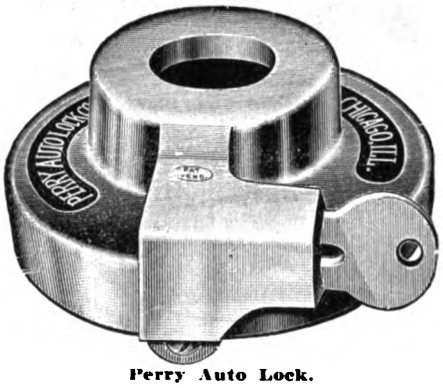
The U. S. standard dash board sight feed oil gauge shown in the accompanying cut has a heavy cast case and ring. The flanges are cast solid to the front part of the case, permitting it to be mounted practically flush on the dash. The interior of the case is finished in white enamel. This gauge matches in sizes, shape and finish the company's 1913 design automobile pressure gauges and can be mounted with the other, retaining a uniform and elegant finish on the dash. They have standard connections: One-eighth inch female pipe thread on the inlet and one-quarter inch on the outlet.

Automobile Gauge.

Manufactured by United States Gauge Co., 67 Wall St., New York City. Price with two-inch dial finished in brass, $4; nickel finish, $4.60.



Saferlite Lens.



Perry Auto Lock.

FULLER FOUNTAIN BRUSH.

The Fuller fountain automobile washer brush, shown in our illustration, is a solution for the old sponge and hose combination. As fast as the dirt is loosened by the brush the water from the nozzle washes it away. The flow of water through it may be regulated from a gentle spray to a straight, forceful stream. This brush is made in three grades, No. 94 of high grade China bristle, No. 94A of Palmyra fiber, and No. 94B of soft cotton. The three grades are interchangeable.

Fuller Fountain Brush.

Manufactured by Fuller Brush Co., 74 Union Place, Hartford, Conn. Prices as follows: No. 94 with nozzle, $2; Nos. 94A and B, 50 cents each.

A. & H. VALVE TOOL.

This device is an implement for truing up both internal and external valve and cap threads of nipples of pneumatic tires. It may also be used for cutting threads, making it a valuable addition to the tool kit. The illustration shows a cross section of the tool as it appears when it is applied to a valve and clearly illustrates its method of application. The makers claim that it is a simple, easily operated instrument with which imperfect threads may be recut 100 per cent. true.

Manufactured by A. & H. Manufacturing Co., Inc., 505-7 W. 45th St., New York, N. Y. Price, $1.50.

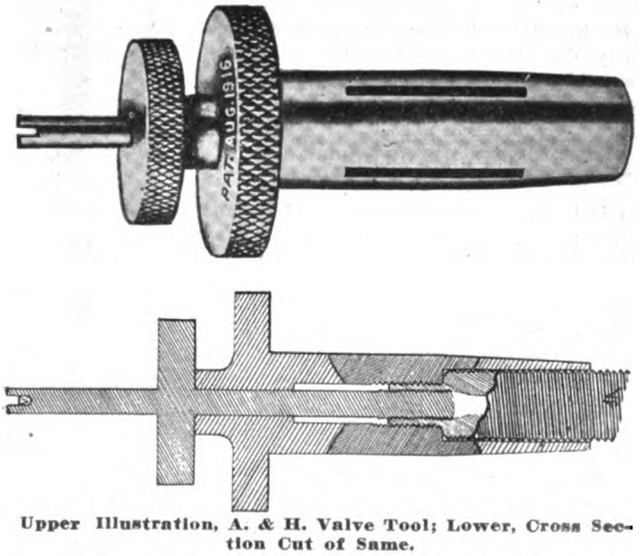
SAFERLITE LENS.

The Saferlite lens is a glass which is designed to be attached to headlights and by its use it is claimed that all headlight glare is eliminated. As our illustration shows, this glass is made up of a number of squares, or reflecting planes, by which the light is refracted and "mellowed." It is claimed that it is impossible to get a blinding light from this lens, that the light is shadowless and that though light projection is complete there is no direct beam.

Manufactured by Saferlite Lens Co., 220 Fifth Ave., New York. Prices as shown in cut.

RUBBER TIRE FILLER.

The National Rubber Tire filler is a substitute for pneumatic inner tubes. This tire filler is made of the best quality of rubber, cut in small particles and vulcanized together, and then cut into sections for inserting in the tire casings.



Upper Illustration, A. & H. Valve Tool; Lower, Cross Section Cut of Same.

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The makers claim that a shoe thus filled rides as easy as air and cannot be punctured. Tire mileage is doubled and tire repair bills eliminated. Tire filler can be used in all style tires.

Distributed by New England Equipment Co., 45 Milk St., Boston, Mass. Prices from $13.50 for 28x3 tires to $39 for 37x5½ tires.

PILLSBURY AUTOPUL.

The Pillsbury Autopul is a device designed for attachment to the rear wheel or wheels for utilizing the power of the car or truck for pulling it from mud, sand or snow. The nuts which fasten the rear wheels to the flange are replaced by specially designed heads. The Autopul may be slipped over the heads when it is to be used and when given a slight turn it is ready for use. A cable is slipped through a hole in the drum and fastened to a tree, post or stake. When the engine is started, the clutch thrown in, the rope is wound around the Autopul, thus pulling the car forward upon its own power. If neither wheel has traction, two Autopuls will be necessary, one on each rear wheel. This device is also useful in pulling another car or truck from its helpless position by jacking up one or both rear wheels of the equipped machine, allowing them to revolve free from the ground, anchoring it and using the Autopul as a capstan.

Manufactured by Pillsbury Manufacturing Co., Minneapolis, Minn. Send for prices and special dealers' proposition.

STANWOOD STEP PLATE.

For automobile running boards, step plates are useful in preventing the tracking of mud, dirt and water into the car, and also insure a secure foothold when stepping on or off the running board. The Stanwood safety step plates consist of a series of high-grade, semi-pliable rubber segments inserted into an embossed anti-rust metal plate. The rubber segments project ⅛ inch above the perforated containing plate, and may be readily replaced, should they become damaged through accident. The plate is secured to the running board by nickel plated oval head brass screws.

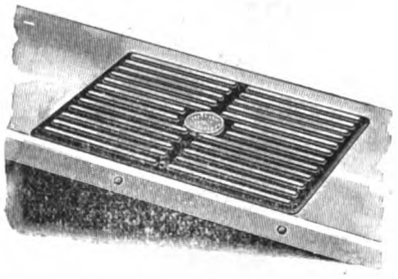
Marketed by Boston Starter and Specialty Co., 182 Columbus Ave., Boston, Mass. Prices from $1.50 to $3.50 according to size.

MYLE-MAYKER.

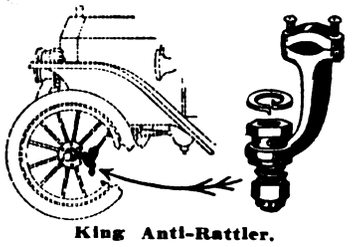
It is being generally conceded that the solution of the low grade fuel proposition will be found in a heated carburetor or air intake device. Such an article is being marketed under the name Myle-Mayker. The device is practically a gravity operated auxillary air control for the Ford carburetor. It is designed to replace the standard hot air pipe and requires but a minute's time for application.

Manufactured by Myle-Mayker Co., Dept. 3, 56 E. Randolph St., Chicago, Ill. Price, $5. Special dealers' proposition.

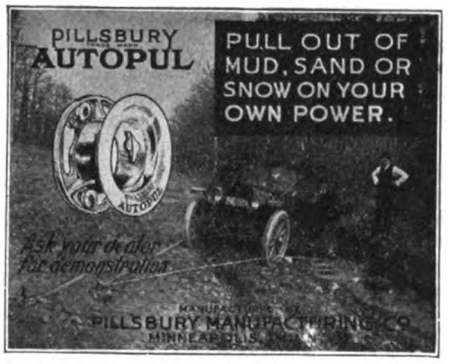
The Nu Way Button Applied.



Stanwood Step Plate.



King Anti-Rattler.



Pillsbury Autopul.

Myle-Mayker.

Aviation Spark Plug.

THE NU WAY BUTTON.

The Nu Way Button is designed to fill a long felt want for an electrical button in the right place. It is attached to the centre of the Ford car steering column, as shown in the illustration, and is convenient and accessible. To attach it, it is only necessary to remove the steering wheel nut, put the Nu Way Button in place and replace.

Manufactured by the Aerofram Co., Inc., 107 Massachusetts Ave., Boston, Mass. Price, 50 cents.

THE WILMO MANIFOLD.

The Wilmo manifold is a one-piece casting, forming a combination exhaust and intake manifold, with a thin dividing wall between. The heat from the exhaust brings the walls of the intake up to a proper temperature to fully vaporize the gasoline before entering the cylinders. The cooling effect created by the velocity of the incoming gas prevents preignition. Wilmo manifolds are adaptable to all types of four-cycle engines where valve ports are on the same side of the block.

Manufactured by Gillette Motors Co., Mishawaka, Ind. Prices range from $5 to $10, according to make of car.

AVIATION SPARK PLUG.

The Champion Ignition Co., makers of AC spark plugs, now have ready for the market what they term an aviation plug, but which is suitable for use in both aviation and racing motors. This plug is being used for regular equipment by some of the aviation motor manufacturers. They have been thoroughly tested and are now a regular product of the company.

Manufactured by Champion Ignition Co., Flint, Mich. Price upon application.

FOOT ACCELERATOR.

In the March issue of the Accessory and Garage Journal, under this heading, we inadvertantly gave the warehouse address, 717 Mather street, Chicago, Ill., of the New Era Spring and Specialty Co., instead of the main office address, which is 864-878 Woodward avenue, Detroit, Mich.

KING ANTI-RATTLER.

The "rubber heel of silence" as it is called by the manufacturers, is designed for application to the Ford car spindle joint as indicated in the illustration. It consists of a bent arm which is fastened to the steering tie rod and to the spindle

The Wilmo Manifold.

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joint. Its function is to place a permanent check to rattling at this point, which will sooner or later result in trouble. Aside from preventing trouble and wear this device eliminates the annoyance caused by rattling and squeaking joints.

Manufactured by the King Specialty Mfg. Co., Brookline, Mass. Price $1 per pair.

MOTO-FAN RADIATOR COOLER.

The Moto-Fan radiator cooler incorporates a very novel application of the principle of maintaining a normal operating temperature in the cooling fluid of the radiator. The device is formed of a hollow tubular ring with a four-bladed fan set in the centre on an upright support. It is screwed into the radiator cap in a threaded hole made for the purpose and makes a semi-circular passage way from the top of the radiator for a distance one-quarter the way around the ring on either side, and opening on the inner side of the ring and close to the field of the fan blades. The fan is caused to rotate by the motion of the car and the whirling action set up in the air sucks out the steam and heated air from one orifice and forces in clean, cool air through the other, thereby tending to maintain an even temperature in the radiator, as with the increase of speed of the car the fan is accelerated proportionately.

Manufactured by the Art Metal Works, 15 Mulberry St., Newark, N. J. Prices, $2.50 and $3.50, according to size.

DETROIT CARTRIDGE LOCK.

A specially designed lock for Ford cars is illustrated herewith. It is designed to be fastened to the Ford magneto brush connection and when in place projects through the floor beneath the coil. Pushing the foot lever on the lock automatically shuts off the engine and locks the car. To start the engine the lock is released by a key and the lever turned upward, thus making the electrical connection, which is necessary before the engine can be started. The device is enclosed in a case hardened steel tube and when locked it is impossible to make a new connection with the magneto or remove the lock without destroying the magneto connection, thereby putting the car out of commission for the time being.

Distributed by Wallace C. Hood Service Bureau, 636-7-8-9 Dime Bank Bldg., Detroit, Mich. Price, $5.

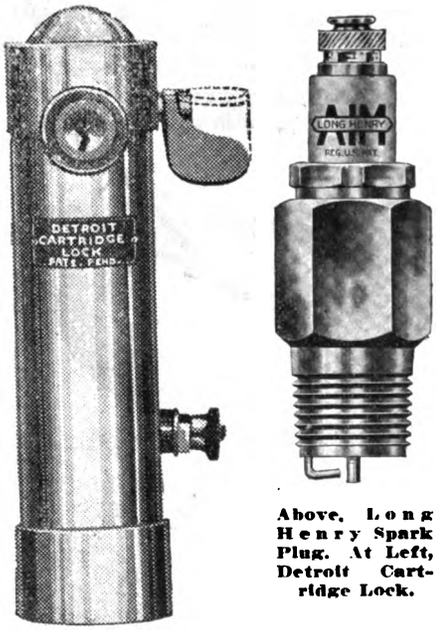
THE CLARK REALITE.

Designed for the Ford car, the Clark Realite is a new device by which the headlights are automatically regulated. It connects in the lamp circuit and the regular Ford bulbs are removed and special bulbs substituted. The lamps are connected in multiple. With the engine running at low speeds, practically all of the current from the magneto is passed to the lights. As the engine speed is increased a part of the current only is used for the lights, the balance being held back by a specially designed impedence coil. This device permits a steady light from both headlights at all engine speeds without the danger of burning out bulbs.

Manufactured by Hilton & Burks, Texola, Okla. Price, $5. Jobbers and dealers are requested to write for details.

Moto Fan Radiator Cooler.

Clark Realite Regulator Box.



Above, Long Henry Spark Plug. At Left, Detroit Cartridge Lock.

J. H. Tonneau Shield.

J. H. TONNEAU SHIELD.

Designed to insure the comfort of passengers on the rear seat of an automobile, the J. H. tonneau shield can be placed in practically any position, fully protecting the tonneau from dust and dirt. When not in use it may be folded back of the front seat. It does not interfere with ingress to or egress from the car at any time, a feature that is made possible by the sectional folding design.

Manufactured by J. H. Tonneau Shield Co., 1777 Broadway, New York, N. Y. Prices ranging from $20 to $60 according to size.

LONG HENRY SPARK PLUG.

The new Long Henry Spark Plug is now on the market. It has an extra long hex, which enables handy wrench operation and the deep petticoat and insulation, together with the large clearance insures the plug against fouling. To quote the manufacturer, "Long Henry is a big, beautiful, aristocratic spark plug, specially designed to meet the requirements of the Ford engine."

Manufactured by Auburn Ignition Mfg. Co., Auburn, N. Y. Price, 75 cents.

AUTOPEP.

Autopep is a vitalizer for gasoline, naphtha and kerosene and also a carbon remover and eliminator. It is made in granulated form, resembling coarse granulated sugar, and put up in air tight tin containers. A certain amount of it is dissolved in the gasoline.

The manufacturers claim that Autopep will remove carbon, prevent carbon deposit, increase power and lengthen mileage. They also say that it is void of acids and chemicals and will not harm the engine, tank or tubing in any way, even after prolonged use.

Manufactured by Autopep Products Co., represented in New England by James L. Holland, 18 Tremont St., Boston, Mass. Price $1 for amount sufficient for treating 100 gallons of gasoline.

NAME ON ROBE.

The "Name On" auto robe is a distinctly new departure. It is made of extra long fiber mohair and is luxurious, durable and warm without being bulky or heavy. It is bound with felt and sewed with three rows of stitches. The robe is reversible, having different colors on each side. The special feature of this robe is the woven-in name. The owner's initials or name is woven in the robe and cannot be removed without destroying the robe. A number of different color combinations are offered.

Made by Wright "Name On" Robe Co., 27 Sherwin St., Waterville, Me. Prices from $10.50 to $15, according to size.

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KNIFE TIMER FOR FORDS.

The Dean Knife Timer for Ford cars presents a new principle in timers for automobiles. The knife contact, from which it derives its name, is made by two hard tempered 60-degree dynamo steel spring blades passing over both sides of the high tempered tool steel terminals, not coming into contact with any other substance or metal. It is enclosed in a shell constructed of a special metal which will draw less moisture than steel and is insulated to eliminate possibilities of short circuiting.

Manufactured by Tisch Auto Supply Co., 215 Division Ave., S., Grand Rapids, Mich. Prices upon application.

PERFECTION RIM TOOL.

We give on this page two illustrations of the Perfection Rim Tool, a handy little device for the man who has to change tires which are mounted on split rims. The tool is adjustable for all sizes of rims and the operation is very simple and rapid. The hooks are locked over the edge of the rim about four inches from the rim lock, then the lever is swung backward until it touches the rim. By this operation the tire is released.

Manufactured by the A. & A. Co., Minneapolis, Minn. Price, $2.50.

RACING SEATS.

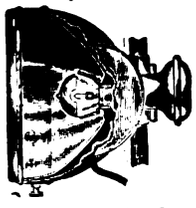
Now that old cars are being remodeled for racing, it is a good time to consider the matter of seats. The Three A Co. racing seats illustrated are attractively finished with black upholstering of good substantial imitation leather, known as mule skin, which has excellent wearing qualities. The cushion is made of the same material stuffed with curled hair. The shell of these seats is made of heavy gauge automobile steel, attached firmly to a wooden bottom seat, and braced with strong angle irons. It is primed to prevent rusting.

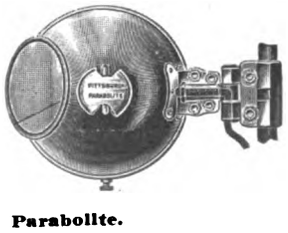
Manufactured by American Automobile Accessories Co., 621 Main St., Cincinnati, O. Price, $15 per pair.

DRIVE SHAFT SUPPORT.

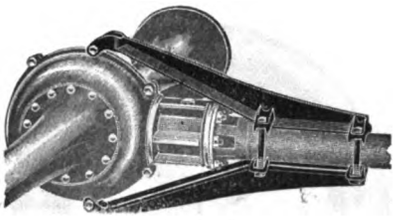
Ekern's drive shaft tube support for Ford cars is made of malleable iron, and is constructed so that it clamps to the drive shaft tube and holds it rigidly to the differential housing. The manufacturers claim that it eliminates all vibrations that tend to cause the drive shaft tube to become crystalized and break. It is claimed that this attachment can be put on in 10 minutes by anyone.

Manufactured by Ekern Bros. Mfg. Co., Flandreau, S. D. Price, $3.50.



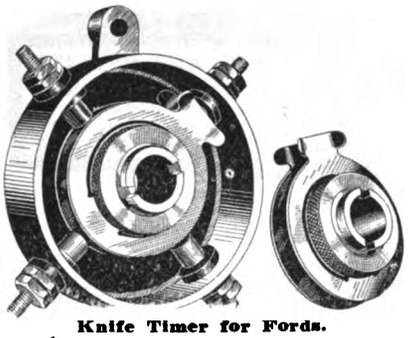


Pittsburg Parabolite.



Drive Shaft Support.

Racing Seat.



Knife Timer for Fords.

Perfection Rim Tool.

Wrought Steel Back Catch.

WROUGHT STEEL BACK CATCH.

The Stanley line of garage hardware has been extended by the addition of a wrought steel back catch for 1¾-inch garage and barn doors. The catch holds the door firmly against the side of the building. Opening the door forces the stout hook over the catch plate, where it is held by the double leaf spring. Slight pressure on the thumb piece releases it. When the door is swung open its momentum is checked and absorbed by the escutcheon plate, which is struck up and takes the shock off the hook. The screw holes in the catch plate are slotted so that it can be adjusted to meet the bumper squarely. They are furnished in either Stanley japan or sherardized finishes.

Manufactured by the Stanley Works, New Britain, Conn. Prices on application.

REMAGNETIZER.

With the increasing number of electrical generators there is a growing demand for apparatus for enabling the owner and repair man to remagnetize the permanent magnets of such apparatus. The device in the illustration is called the Ford Special Remagnetizer, and is intended to be used to restore the magnets in the Ford car magneto, without being obliged to remove them first from the car or disassemble the magneto or transmission. When used for this purpose only the cover of the transmission need be removed. The remagnetizer is operated by current from storage batteries, dry cells, or through resistance bank from lighting current.

Manufactured by Townsan Auto Specialty Co., 822 Western Ave., Minneapolis, Minn. Write for prices.

PITTSBURG PARABOLITE.

The Pittsburg Parabolite is a new type of spot light with a patented parabolite reflector designed to concentrate the full power of the light wherever the operator wishes it to fall and does not glare beyond the area covered by the beam. It is claimed that it produces a beam of light that is effective at distance for practical purposes and gives great beam candle power per lamp power, minimizing both lamp cost and current consumption. It is fitted with a bracket for fastening it to the windshield and is very easily attached.

It is equipped with a four-inch diminishing mirror and also an adjustable nitrogen lamp.

Manufactured by the Pittsburg Electric Specialties Co., Pittsburg, Penn. Price, $7.50.

Remagnetizer.

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SPECIFICATIONS

1917

GASOLINE MOTOR TRUCKS

The Largest and Most Comprehensive Compilation of Practical Data of American Freight-Carrying Automobiles Ever Compiled

Reproduced from The MOTOR TRUCK, February 1917, Issue

This is the second and concluding installment of these data, which have been carefully verified and corrected. The first installment was published in the March issue and included gasoline trucks of small capacities.

A limited number of the March edition is available and copies of it are obtainable by addressing this publication.

The May issue of this magazine will present tabulated specifications of American Agricultural and Industrial Tractors.

Accessory & Garage Journal

Single Copies, $.20 *Yearly Subscription, $2.00*

Times Building, *Pawtucket, R. I.*

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AMERICAN MANUFACTURERS OF 1917 GASOLINE WAGONS, TRUCKS AND TRACTORS.

The Specifications of the Vehicles in Bold Face Type Are Included in This Issue.

A. & B	American and British Manufacturing Co.,	Providence, R. I.
A. & R	Abendroth & Root Manfg. Co.,	Newburgh, N. Y.
Acason	Acason Motor Truck Co.,	Detroit, Mich.
Acme	Cadillac Auto Truck Co.,	Cadillac, Mich.
Alamo	Alamo Manufacturing Co.,	Hillsdale, Mich.
Allis-Chalmers	Allis-Chalmers Manufacturing Co.,	Milwaukee, Wis.
American	American Motor Truck Co.	Hartford, Conn.
Argo	Argo Motor Co.,	Jackson, Mich.
Armleder	O. Armleder Co.,	Cincinnati, O.
Atlas	Martin Truck & Body Corp.,	York, Pa.
Atterbury	Atterbury Motor Car Co.,	Buffalo, N. Y.
Autocar	Autocar Co.,	Ardmore, Pa.
Auto Truck	Auto Truck Co.,	Bangor, Pa.
Available	Available Truck Co.,	Chicago, Ill.
Avery	Avery Co.,	Peoria, Ill.
Barker	C L. Barker Factory,	Norwalk, Conn.
Bauer	Bauer Machine Works Co.,	Kansas City, Mo.
Beech Creek	Beech Creek Truck and Auto Co.,	Beech Creek, Pa.
Bell	Bell Motor Car Co.,	York, Pa.
Bessemer	Bessemer Motor Truck Co.,	Grove City, Pa.
Bethlehem	Bethlehem Motor Corp.,	Allentown, Pa.
Bimel	Bimel Buggy Co.,	Sidney, O.
Blair	Blair Motor Truck Co.,	Newark, O.
Board	B. F. Board Motor Truck Co.,	Alexandria, Va.
Bollstrom	Bollstrom Products Sales Co.,	Battle Creek, Mich.
Bourne	Bourne Magnetic Truck Co.,	Philadelphia, Pa.
Brennan	Brennan Manufacturing Co.,	Syracuse, N. Y.
Brinton	Brinton Motor Truck Co.,	Philadelphia, Pa.
Briscoe	Briscoe Motor Co.,	Jackson, Mich.
Brockway	Brockway Motor Wagon Co.,	Cortland, N. Y.
Brown	Brown Carriage Co.,	Cincinnati, O.
Boyd	Jas. Boyd & Bro., Inc.,	Philadelphia, Pa.
Bucklen	H. E. Bucklen, Jr., Motor Truck Co.,	Elkhart, Ind.
Buckley-Rider	Buckley-Rider Tractor Co.,	Los Angeles, Cal.
Buick	Buick Motor Co.,	Flint, Mich.
Burford	H. G. Burford Co.,	Fremont, O.
Carlton	Carlton Hill Motor Car Co.,	Rutherford, N. J.
Carroll	Carroll Motor Car Co.,	Strassburg, Pa.
Casey	F. A. Casey,	Billerica, Mass.
Chadwick	Chadwick Engineering Works,	Pottstown, Pa.
Champion	Champion Motors Co.,	Fulton, Ill.
Champion	Champion Wagon Co.,	Owego, N. Y.
Chase	Chase Motor Truck Co.,	Syracuse, N. Y.
Coleman	Coleman Carriage and Harness Co.,	Illion, N. Y.
Collier	Collier Motor Truck Co.,	Painesville, O.
Columbia	Columbia Motor Truck and Trailer Co.,	Pontiac, Mich.
Comet	Comet Motor Truck Co.,	Rockford, Ill.
Commerce	Commerce Motor Car Co.,	Detroit, Mich
Concord	Abbott & Downing Co.,	Concord, N. H.
Continental (C)	Continental Motor Truck Co.,	Chicago, Ill.
Continental (S)	Continental Truck Manufacturing Co.,	Superior, Wis.
Corbitt	Corbitt Motor Truck Co.,	Henderson, N. C.
Corliss	Corliss Motor Truck Co.,	Corliss, Wis.
Couple-Gear	Couple-Gear Freight Wheel Co.,	Grand Rapids, Mich.
Crawford	Crawford Automobile Co.,	Hagerstown, Md.
Croce	Croce Automobile Co.,	Asbury Park, N. J.
Crowther	Crowther Motors Corp.,	Philadelphia, Pa.
Crown	Crown Commercial Car Co.,	North Milwaukee, Wis.
Curtis	Pittsburg Machine Tool Co.,	Braddock, Pa.
Dain	Dain Manufacturing Co.,	Ottumwa, Ia.
Dart	Dart Motor Truck Co.,	Waterloo, Ia.
Day-Elder	Day-Elder Motors Co.,	Newark, N. J.
Dayton	Dayton Motor Truck Co.,	Dayton, O.
DeKalb	DeKalb Wagon Co.,	DeKalb, Ill.
Denby	Denby Motor Truck Co.,	Detroit, Mich.
Denneo	Denneen Motor Co.,	Cleveland, O.
Detroit	Detroit Commercial Car Co.,	Pontiac, Mich.
Diamond T	Diamond-T Motor Car Co.,	Chicago, Ill.
Dispatch	Dispatch Motor Car Co.,	Minneapolis, Minn.
Doane	Doane Motor Truck Co.,	San Francisco, Cal.
Dominion Tractor	Dominion Motor Truck Co.,	Detroit, Mich.
Kopp	Kopp Motor Truck Co.,	Buffalo, N. Y.
Krebs	Krebs Commercial Car Co.,	Clyde, O.
Kressler	Kressler Auto Co.,	Fostoria, O.
Lambert	Buckeye Manufacturing Co.,	Anderson, Ind.
Landshaft	William Landshaft & Sons,	Chicago, Ill.
Lane	Lane Motor Truck Co.,	Kalamazoo, Mich.
Lange	Lange Motor Truck Co.,	Pittsburg, Pa.
Lawson	Lawson Manufacturing Co.,	Pittsburg, Pa.
Larrabee	Larrabee-Deyo Motor Truck Co.,	Binghamton, N. Y.
Lawson	Lawson Mfg. Co.,	Pittsburg, Pa.
Lenox	Lenox Motor Car Co.,	Boston, Mass.
Lescina	Lescina Automobile Co.,	Newark, N. J.
Lincoln	Lincoln Motor Truck Co.,	Detroit, Mich.
Lippard-Stewart	Lippard-Stewart Motor Car Co.,	Buffalo, N. Y.
Little Giant	Chicago Pneumatic Tool Co.,	Chicago, Ill.
Lombard	Lombard Auto-Tractor-Truck Corp.,	New York, N. Y.
Lord Baltimore	Lord Baltimore Motor Truck Co.,	Baltimore, Md.
Lovelace	Lovelace Engineering Co.,	New Brunswick, N. J.
Maccar	Maccar Truck Co.,	Scranton, Pa.
Mack	International Motor Co.,	New York, N. Y.
Manly	Manly Motor Corp.,	Chicago, Ill.
Maxwell	Maxwell Motor Co.,	Detroit, Mich.
Menominee	Menominee Motor Truck Co.,	Menominee, Mich.
Mercury	Mercury Manufacturing Co.,	Chicago, Ill.
Mercury-Bully Tractor	Mercury Manufacturing Co.,	Chicago, Ill.
Metropolitan	Metropolitan Motors, Inc.,	Bronx, N. Y.
Mansur	Mansur Motors Co.,	Haverhill, Mass.
Metz	Metz Company.,	Waltham, Mass.
Modern	Bowling Green Motor Car Co.,	Bowling Green, O.
Mogul	Mogul Motor Truck Co.,	St. Louis, Mo.
Mohawk	Mohawk Motor Truck Co.,	Ravenna, O.
Monitor	Monitor Automobile Works	Janesville, Wis.
Moon	Jos. W. Moon Buggy Co.,	St. Louis, Mo.
Moore	Pacific Products Co.,	Torrence, Cal.
Moreland	Moreland Motor Truck Co.,	Los Angeles, Cal.
Morse	Morse Cyclecar Co.,	Pittsburg, Pa.
Morton	Morton Truck and Tractor Co.,	Harrisburg, Pa.
Nelson & LeMoon	Nelson & LeMoon,	Chicago, Ill.
Netco	New England Truck Co.,	Fitchburg, Mass.
New London	New London Motor Truck Co.,	New London, Conn.
New York	Tegetmeier & Reipe,	New York, N. Y.
Niles	Niles Car and Manufacturing Co.,	Niles, O.
Old Hickory	Kentucky Wagon Manufacturing Co.,	Louisville, Ky.
Old Reliable	Old Reliable Motor Truck Co.,	Chicago, Ill.
Overland	Willys-Overland Co.,	Toledo, O.
Packard	Packard Motor Car Co.,	Detroit, Mich.
Packet	Packet M. C. Manufacturing Co.,	Minneapolis, Minn.
Page	Page Buggy Co.,	Marshall, Mich.
Palmer	Palmer-Meyer Motor Car Co.,	St. Louis, Mo.
Palmer-Moore	Palmer-Moore Co.,	Syracuse, N. Y.
Paulding	Anchor Auto Co.,	St. Louis, Mo.
Peerless	Peerless Motor Truck and Corporation,	Cleveland, O.
Pennsy	Pennsy Motor Car Co.,	York, Pa.
Phoenix Centiped	Phoenix Manufacturing Co.,	Eau Claire, Wis.
Pierce-Arrow	Pierce-Arrow Motor Car Co.,	Buffalo, N. Y.
Piercy	Hub Motor Truck Co.,	Columbus, O.
Piggins	Piggins Bros. Motor Truck Co.,	Racine, Wis.
Pullman	Pullman Motor Car Co.,	York, Pa.
Pull-More	Pull-More Motor Co.,	Newcastle, Pa.
Rainier	Rainier Motor Corp.,	New York City.
Reo	Reo Motor Truck Co.,	Lansing, Mich.
Republic	Republic Motor Truck Co.,	Alma, Mich.
Riker	Locomobile Company of America,	Bridgeport, Conn.
Robinson	Golden West Motors Co.,	Sacramento, Cal.
Rockford	Rockford Motor Truck Co.,	Rockford, Ill.

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Dornfield	John Dornfield Co.,	Watertown, Wis.
Dorris	Dorris Motor Car Co.,	St. Louis, Mo.
Duffy	Duffy Bros. Motor Truck Co.,	San Francisco, Cal.
Duplex	Duplex Truck Co.,	Lansing, Mich.
Durocar	Amalgamated Motors Corp.,	Alhambra, Cal.
Duryea	Duryea Motors, Inc.,	Philadelphia, Pa.
Eastern	Eastern Power Truck Co.,	Providence, R. I.
Economy	Economy Motor Co.,	Tiffin, O.
Elmira	Elmira Commercial Car Co.,	Elmira, N. Y.
Ellsworth	Mills-Ellsworth Co.,	Keokuk, Ia.
Erie	Erie Motor Truck Manufacturing Co.,	Erie, Pa.
Fargo	Fargo Motor Car Co.,	Chicago, Ill.
Fawick	Fawick Motor Car Co.,	Sioux Falls, S. D.
Federal	Federal Motor Truck Co.,	Detroit, Mich.
Forschler	Forschler Motor Truck Mfg. Co., Inc.,	New Orleans, La.
Four-Drive	Four-Drive Tractor Co.,	Big Rapids, Mich.
Franklin	Franklin Commercial Truck Co.,	Franklin, Pa.
Ford	Ford Motor Co.,	Detroit, Mich.
Frome	R. L. Frome Manfacturing Co.,	Sheboygan, Wis.
Fulton	Fulton Motor Truck Co.,	Farmingdale, L. I., N. Y.
F. W. D	Four Wheel Drive Auto Co.,	Clintonville, Wis.
Gabriel	Gabriel Motor Truck Co.,	Cleveland, O.
Garford	Garford Motor Truck Co.,	Lima, O.
Gary	Gary Motor Truck Co.,	Gary, Ind.
G. A. Schacht	G. A. Schacht Motor Truck Co.,	Cincinnati, O.
Gay	S. G. Gay Co.,	Ottawa, Ill.
Geneva	Geneva Wagon Co.,	Geneva, N. Y.
Gersix	Gerlinger Motor Car Co.,	Portland, Ore.
G-M-C	General Motors Truck Co.,	Pontiac, Mich.
Gramm-Bernstein	Gramm-Bernstein Motor Truck Co.,	Lima, O.
Great Southern	Great Southern Automobile Co.,	Birmingham, Ala.
G-V-Mercedes	General Vehicle Co.,	Long Island City, N. Y.
Hahn	Hahn Motor Truck Co.,	Hamburg, Pa.
Hall	Lewis-Hall Iron Works,	Detroit, Mich.
Handy Wagon	Auburn Motor Chassis Co.,	Auburn, Ind.
Hanger	C. F. Hanger Co.,	Cleveland, O.
Hannibal	Hannibal Motor Car Co.,	Hannibal, Mo.
Harrison	Robert Harrison Co.,	South Boston, Mass.
Harvey	Harvey Motor Truck Co.,	Harvey, Ill.
Haughton	Haughton Sulky Co.,	Marion, O.
Hawkeye	Hawkeye Mfg. & Repair Co.,	Sioux City, Ia.
Henderson	Henderson Bros.,	North Cambridge, Mass.
Hercules (S. B.)	Hercules Motor Truck Co.,	South Boston, Mass.
Hewitt-Ludlow	Hewitt-Ludlow Auto Co.,	San Francisco, Cal.
Highgrade	Highgrade Motors Co.,	Grand Rapids, Mich.
Hoadley	Hoadley Bros.,	Gosport, Ind.
Hoover	Hoover Wagon Co.,	York, Pa.
Horner	Detroit-Wyandotte Motor Co.,	Wyandotte, Mich.
Howard	Howard Motor Truck Co.,	Boston, Mass.
Hurlburt	Hurlburt Motor Truck Co.,	New York, N. Y.
I-H-C	International Harvester Co.,	Akron, O.
Independent	Independent Motors Corp.,	Port Huron, Mich.
Indiana	Indiana Motor Truck Co.,	Marion, Ind.
Inter State	Inter State Motor Co.,	Muncie, Ind.
Iowa	Iowa Motor Truck Co.,	Ottumwa, Ia.
Jeffery	Nash Motors Co.,	Kenosha, Wis.
Kanawha	Kanawha Auto Truck Co.,	Charleston, W. Va.
Kearns	Kearns Motor Car Co.,	Beavertown, Pa.
Kelly-Springfield	Kelly-Springfield Motor Truck Co.,	Springfield, O.
King	A. B. King Manufacturing Co.,	Kingston, N. Y.
KisselKar	Kissel Motor Car Co.,	Hartford, Wis.
Kleiber	Kleiber & Co., Inc.,	San Francisco, Cal.
Knickerbocker	Knickerbocker Motor Truck Co.,	New York, N. Y.
Knox Tractor	Knox Motors Associates,	Springfield, Mass.
Koehler	H. J. Koehler S. G. Co.,	Newark, N. J.
Koenig & Luhrs	Koenig & Luhrs Wagon Co.,	Quincy, Ill.
Rocco	Rocco Motor Co.,	Hannibal, Mo.
Rowe	Rowe Motor Co.,	Dowlingtown, Pa.
Royal	Royal Motor Truck Co.,	New York, N. Y.
R-S	Reading-Standard Co.,	Reading, Pa.
Rush	Rush Delivery Car Co.,	Philadelphia, Pa.
Sandow	Sandow Truck Co.,	Chicago, Ill.
Sanford	Sanford Motor Truck Co.,	Syracuse, N. Y.
Saurer	International Motor Co.,	New York, N. Y.
Sawyer-Massey	Sawyer-Massey Co., Ltd.,	Hamilton, Ont., Canada.
Saxon	Saxon Motor Co.,	Detroit, Mich.
Schleicher	Schleicher Motor Vehicle Co.,	New York, N. Y.
Schoepfin	L. G. Schoepfin Co.,	Buffalo, N. Y.
Selden	Selden Truck Sales Co.,	Rochester, N. Y.
Service	Service Motor Truck Co.,	Wabash, Ind.
Sheridan	Sheridan Commercial Car Co.,	Harvey, Ill.
Siebert	Siebert Motor Truck Co.,	Toledo, O.
Signal	Signal Motor Truck Co.,	Detroit, Mich.
Sphinx	Sphinx Motor Car Co.,	York, Pa.
Standard	Standard Motor Truck Co.,	Detroit, Mich.
Standard Tractor	Standard Tractor Co.,	Brooklyn, N. Y.
Star	Star Motor Co.,	Cincinnati, O.
States	States Motor Co.,	Kalamazoo, Mich.
Steele	W. M. Steele,	Worcester, Mass.
Stegeman	Stegeman Motor Car Co.,	Milwaukee, Wis.
Sterling	Sterling Motor Truck Co.,	Milwaukee, Wis.
Stewart (B)	Stewart Motor Corporation,	Buffalo, N. Y.
Stewart (C)	Stewart Iron Works,	Covington, Ky.
Studebaker	Studebaker Corporation,	Detroit, Mich.
Sullivan	Sullivan Motor Truck Co.,	Rochester, N. Y.
Superior	E. G. Willingham's Sons,	Atlanta, Ga.
Thomas	Thomas Auto Truck Co.,	New York City.
Tiffin	Tiffin Wagon Co.,	Tiffin, O.
Toeppner	Toeppner Bros.,	Bay City, Mich.
Tower	Tower Motor Truck Co.,	Greenville, Mich.
Trabold	Trabold Motor Manufacturing Co.,	Johnstown, Pa.
Transport Tractor	Transport Tractor Co.,	Long Island City, N. Y.
Trumbull	Trumbull Motor Car Co.,	Bridgeport, Conn.
Tulsa	Tulsa Automobile & Manufacturing Co.,	Tulsa, Okla.
Union	Union Motor Truck Co.,	Bay City, Mich.
United	United Motor Truck Co.,	Grand Rapids, Mich.
United States	United States Motor Truck Co.,	Cincinnati, O.
Universal	Universal Service Co.,	Detroit, Mich.
Van Winkle	Van Winkle Motor Truck Co.,	Atlanta, Ga.
Velie	Velie Motor Vehicle Co.,	Moline, Ill.
Viall	Viall Motor Car Co.,	Chicago, Ill.
Vim	Vim Motor Truck Co.,	Philadelphia, Pa.
Voltz	Voltz Bros.,	Chicago, Ill.
Walter	Walter Motor Truck Co.,	New York, N. Y.
Ware	Twin City Four Wheel Drive Co.	St. Paul, Minn.
Warren	Warren Motor Truck Co.,	Warren, O.
Washington	Washington Motor Car Co.,	Hyattsville, Md.
Watson	Watson Wagon Co.,	Canastota, N. Y.
Weier-Smith	Weier-Smith Truck Co.,	Birmingham, Mich.
West Coast	West Coast Wagon Co.,	Tacoma, Wash.
Western	Western Automobile Co.,	Seattle, Wash.
White	White Motor Co.,	Cleveland, O.
Wichita	Wichita Falls Motor Co.,	Wichita Falls, Tex.
Wilcox	H. E. Wilcox Motor Co.,	Minneapolis, Minn.
Wilson	J. C. Wilson Co.,	Detroit, Mich.
Winther	Winther Motor Truck Co.,	Kenosha, Wis.
Wisconsin	Myers Machine Co.,	Sheboygan, Wis.
Witt-Will	Witt-Will Co.,	Washington, D. C.
Wolverine	Wolverine-Detroit Motor Co.,	Detroit, Mich.
Zeitler & Lamson	Lamson Truck & Tractor Co.,	Chicago, Ill.
Zimmerman	Zimmerman Manufacturing Co.,	Auburn, Ind.

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MOTOR TRUCK MODELS, CAPACITIES AND PRICES

Alphabetical Arrangement of the Manufacturers and Indices of the Pages on Which the Specifications of Their Products Can Be Found.

Acason Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
2	4,000	.....	.....	84
—	7,000	.....	.....	91

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Model	Cap.	Chas. Price	Comp.	Page
A	14,000	.....	.....	97

American & British Mfg. Co., Prov., R. I.

Model	Cap.	Chas. Price	Comp.	Page
..	6,000	.....	.....	90
6 J	10,000	.....	.....	94

Anchor Auto Co., St. Louis, Mo.

Model	Cap.	Chas. Price	Comp.	Page
D 1	1,500	$975	.....	78
G G 1	2,000	1,300	.....	81
E E 1	3,000	1,600	.....	82
H 1	4,000	1,950	.....	87

O. Armleder Co., Cincinnati, O.

Model	Cap.	Chas. Price	Comp.	Page
H W	4,000	$2,800	.....	84
K W	7,000	3,500	.....	91

Atterbury Motor Car Co., Buffalo, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
6 B	2,000	$1,875	.....	79
6 R	3,000	2,075	.....	82
6 C	4,000	2,575	.....	84
6 D	7,000	3,375	.....	91
7 E	10,000	4,375	.....	94

Autocar Company, Ardmore, Penn.

Model	Cap.	Chas. Price	Comp.	Page
21 F	4,000	$1,650	.....	84

Auto Truck Co., Bangor, Pa.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,250	.....	79

Available Truck Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,700	.....	79
B	4,000	2,250	.....	84
..	7,000	3,300	.....	91
5	10,000	4,400	.....	94

Avery Co., Peoria, Ill.

Model	Cap.	Chas. Price	Comp.	Page
B	4,000	$2,700	.....	84
B	6,000	3,200	.....	90
B	10,000	4,500	.....	94

O. L. Barker Factory, Norwalk, Conn.

Model	Cap.	Chas. Price	Comp.	Page
U	2,000	$2,000	.....	79
U	3,000	1,600	.....	82
V	5,000	1,800	.....	88

Bauer Mch Wks. Co., Kansas City, Mo.

Model	Cap.	Chas. Price	Comp.	Page
A	1,000	$720	.....	76
B	1,500	840	.....	77

Beech Creek T'k. & Auto. Co., B'h. C'k., Pa.

Model	Cap.	Chas. Price	Comp.	Page
3 A	6,000	$3,850	.....	90

Bell Motor Car Co., York, Pa.

Model	Cap.	Chas. Price	Comp.	Page
17	1,000	.....	.....	76

Bessemer Motor T. Co., Grove City, Pa.

Model	Cap.	Chas. Price	Comp.	Page
J	2,000	$1,985	.....	79
G	2,000	1,075	.....	79
D	4,000	2,200	.....	84
E	7,000	3,100	.....	91

Bethlehem Motors Corp., Allentown, Pa.

Model	Cap.	Chas. Price	Comp.	Page
A 1	2,500	$1,125	$1,165	81
B 1	4,500	1,665	.....	88

Blair Motor Truck Co., Newark, O.

Model	Cap.	Chas. Price	Comp.	Page
2 C	4,000	$2,850	.....	84
2 D	6,000	3,250	.....	90
2 E	8,000	3,750	.....	93
2 F	10,000	4,250	.....	94

Bollstrom Prod. S. Co., Battle Creek, Mich.

Model	Cap.	Chas. Price	Comp.	Page
A	1,500	$1,200	.....	77

Bourne Magnetic Truck Co., Phila., Pa.

Model	Cap.	Chas. Price	Comp.	Page
V M	4,000	$3,150	.....	84
X M	7,000	3,850	.....	91

Bowling Green M. C. Co., Bowling Green, O.

Model	Cap.	Chas. Price	Comp.	Page
T	2,000	.....	.....	80
N	3,000	.....	.....	83
R	4,000	.....	.....	86
B	7,000	.....	.....	92

Brinton Motor Truck Co., Phila., Pa.

Model	Cap.	Chas. Price	Comp.	Page
11	2,000	$995	.....	79
F	5,000	2,250	.....	88

Briscoe Motor Corp., Jackson, Mich.

Model	Cap.	Chas. Price	Comp.	Page
L Del.	1,000	.....	$585	76

Brockway M. Truck Co., Cortland, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
O	2,000	$1,500	.....	79
J 2	3,000	1,875	.....	82
K 2	4,000	2,250	.....	85
R	7,000	3,200	.....	91

Buckeye Mfg. Co., Anderson, Ind.

Model	Cap.	Chas. Price	Comp.	Page
V 1	1,000	$900	.....	76
V 3	3,000	1,500	.....	83
V 5	4,000	2,000	.....	86

Buick Motor Co., Flint, Mich.

Model	Cap.	Chas. Price	Comp.	Page
D 4	2,000	$1,150	$1,225	79

H. G. Burford Co., Fremont, O.

Model	Cap.	Chas. Price	Comp.	Page
O 3	4,000	$2,250	.....	85
D 3	8,000	3,600	.....	93

Cadillac Auto Truck Co., Cadillac, Mich.

Model	Cap.	Chas. Price	Comp.	Page
B	2,000	$1,575	.....	79
A	4,000	2,200	.....	84
C	7,000	3,000	.....	91

Chadwick Eng. Works, Pottstown, Pa.

Model	Cap.	Chas. Price	Comp.	Page
21	1,200	$650	.....	77

Champion Wagon Co., Inc., Owego, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
25	1,500	$875	.....	77

Chase Motor Truck Co., Syracuse, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
T	1,500	$1,500	.....	77
A	2,000	1,725	.....	79
C	3,000	2,125	.....	82
B	5,000	2,475	.....	88
X	6,000	2,800	.....	90
O	7,000	3,300	.....	91

Chicago Pneumatic Tool Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
H	2,000	$1,400	.....	80
15	2,000	1,500	.....	80
H	3,000	1,500	.....	83
16	4,000	2,250	.....	86

Coleman Carriage & Har. Co., Illion, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
J	4,000	$2,400	.....	85
H	6,000	3,000	.....	90

Collier Motor Truck Co., Painesville, O.

Model	Cap.	Chas. Price	Comp.	Page
M	1,500	$800	.....	77

Columbia M. T. & T'r. Co., Pontiac, Mich.

Model	Cap.	Chas. Price	Comp.	Page
E	4,000	$1,850	.....	85

Commerce Motor Car Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
N	1,500	$875	.....	77
E	2,000	1,175	.....	79

Continental Motor Truck Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
C A 1	2,000	$1,550	.....	79
C B 1½	3,000	1,750	.....	82
C C 2	4,000	2,100	.....	85
C D 3½	7,000	3,000	.....	91
C P 4	8,000	3,350	.....	93
C S 5	10,000	4,000	.....	94

Continental Truck Mfg. Co., Superior, Wis.

Model	Cap.	Chas. Price	Comp.	Page
W 20	5,000	$2,000	$2,200	88
W 30	8,000	2,750	3,000	93

Corbitt Motor Truck Co., Henderson, N. C.

Model	Cap.	Chas. Price	Comp.	Page
E	2,000	$1,300	.....	79
D	3,000	2,150	.....	82
C	4,000	2,400	.....	85
B	5,000	2,650	.....	88
A	7,000	3,200	.....	91

Corliss Motor Truck Co., Corliss, Wis.

Model	Cap.	Chas. Price	Comp.	Page
A	1,000	$800	.....	76

Couple G. F. W. Co., Grand Rapids, Mich.

Model	Cap.	Chas. Price	Comp.	Page
H C	7,000	$5,100	.....	91
A C	10,000	5,500	.....	94

Croce Automobile Co., Asbury Park, N. J.

Model	Cap.	Chas. Price	Comp.	Page
18	1,000	$800	.....	76
18	3,000	1,900	.....	82
18	5,000	2,600	.....	88

Crowther Motors Corp., Rochester, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
L D	1,000	.....	$600	76

Day-Elder Motors Corp., Newark, N. J.

Model	Cap.	Chas. Price	Comp.	Page
..	1,500	$975	.....	77
..	2,000	1,250	.....	79
..	3,000	1,500	.....	83
..	5,000	2,000	.....	88

Dart Motor Truck Co., Waterloo, Ia.

Model	Cap.	Chas. Price	Comp.	Page
B B	1,000	$1,200	.....	76
E	2,000	1,850	.....	79
C C	4,000	2,470	.....	85

Dayton Motor Truck Co., Dayton, O.

Model	Cap.	Chas. Price	Comp.	Page
U	4,000	$2,650	.....	85
A	7,000	3,400	.....	91
B	10,000	4,500	.....	94
E	15,000	4,950	.....	97

DeKalb Wagon Co., DeKalb, Ill.

Model	Cap.	Chas. Price	Comp.	Page
E 2	4,000	$2,100	.....	85
E 2½	5,000	2,450	.....	88

Denby Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
12	2,000	$1,275	.....	79
13	3,000	1,775	.....	82
15	5,000	2,150	.....	88

Denneen Motor Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
10	2,500	$1,385	.....	81

Detroit Commer. Car Co., Pontiac, Mich.

Model	Cap.	Chas. Price	Comp.	Page
B	1,000	.....	.....	76

Detroit Wyan. M. T. Co., Wyandotte, Mich.

Model	Cap.	Chas. Price	Comp.	Page
..	3,000	$2,350	.....	82
F G	4,000	.....	.....	86
F G	6,000	.....	.....	90
F	10,000	4,350	.....	94

Diamond T Motor Car Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
J 5	2,000	$1,550	.....	79
J 4	3,000	2,000	.....	82
J 3	4,000	2,325	.....	85
L	7,000	3,475	.....	91
R	10,000	4,300	.....	94

Dispatch M. Car Co., Minneapolis, Minn.

Model	Cap.	Chas. Price	Comp.	Page
L	1,500	$1,100	.....	78

Doane Motor T. Co., San Francisco, Cal.

Model	Cap.	Chas. Price	Comp.	Page
1916	5,000	.....	$3,000	88
1916	12,000	.....	4,500	96

Dominion Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
Tractor	12,000	$3,200	.....	97

Dorris Motor Car Co., St. Louis, Mo.

Model	Cap.	Chas. Price	Comp.	Page
1 B W	4,000	$2,185	.....	85

Duplex Power Car Co., Charlotte, Mich.

Model	Cap.	Chas. Price	Comp.	Page
C	4,000	$2,800	.....	85
E	4,000	.....	.....	85
D	6,000	3,300	.....	90
E	7,000	.....	.....	91

Duryea Motors, Inc., Philadelphia, Pa.

Model	Cap.	Chas. Price	Comp.	Page
A B or C	1,000	$600	.....	76

Economy Motor Co., Tiffin, O.

Model	Cap.	Chas. Price	Comp.	Page
..	1,000	.....	$795	76

Fargo Motor Car Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
O	4,000	$1,390	.....	85

Federal Motor Truck Co., Detriot, Mich.

Model	Cap.	Chas. Price	Comp.	Page
S	2,000	.....	.....	79
M	3,000	$1,800	.....	82
O & P	4,000	2,100	.....	85
L	7,000	2,800	.....	91
W	10,000	.....	.....	94

Forschler M. T. Mfg. Co., N. Orleans, La.

Model	Cap.	Chas. Price	Comp.	Page
A O	2,000	$1,650	.....	79
B O	4,000	2,250	.....	85

Four Wheel Drive A. Co., Clintonville, Wis.

Model	Cap.	Chas. Price	Comp.	Page
B	6,000	$4,000	.....	90

Fulton M. T. Co., Farmingdale, L. I., N. Y.

Model	Cap.	Chas. Price	Comp.	Page
F 1	3,000	$1,090	.....	82

Gabriel Auto Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
B	1,500	$800	.....	78

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C	2,000	1,600	.....	79
D	3,000	2,000	.....	83
E	4,000	2,400	.....	85
F	7,000	3,200	.....	91

Garford Motor Truck Co., Lima, O.

Model	Cap.	Chas. Price	Comp.	Page
75	2,000	$1,750	.....	79
66	3,000	2,100	.....	82
78 B	4,000	2,600	.....	85
77 B	7,000	3,700	.....	91
68	10,000	4,500	.....	94
69	12,000	4,700	.....	96

Gary Motor Truck Co., Gary, Ind.

Model	Cap.	Chas. Price	Comp.	Page
F	2,000	.....	.....	80
G	3,000	.....	.....	82
H	4,000	.....	.....	85

General Motors Truck Co., Pontiac, Mich.

Model	Cap.	Chas. Price	Comp.	Page
15	1,500	$1,150	.....	78
30	2,000	1,900	.....	82
31	3,000	2,100	.....	83
40	4,000	2,275	.....	85
41	4,000	2,550	.....	85
70	7,000	3,300	.....	92
71	7,000	3,500	.....	92
100	10,000	3,850	.....	94
101	10,000	4,100	.....	94

General Veh. Co., Long Island City, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
F V	12,000	$4,500	.....	96

Geneva Wagon Co., Geneva, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
1	1,500	$750	.....	78

Gerlinger Motor Co., Tacoma, Wash.

Model	Cap.	Chas. Price	Comp.	Page
G	5,000	$2,650	.....	88

Gramm-Bernstein Motor T. Co., Lima, O.

Model	Cap.	Chas. Price	Comp.	Page
..	2,000	$1,750	.....	80
..	3,000	2,150	.....	82
..	4,000	2,450	.....	85
..	5,000	2,900	.....	88
..	7,000	3,600	.....	92
..	12,000	4,500	.....	96

Hahn Motor Truck Co., Hamburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
C	2,000	$1,750	.....	80
E	4,000	2,200	.....	85

C. F. Hanger Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
B	1,000	$875	.....	76

Hannibal Motor Car Co., Hannibal, Mo.

Model	Cap.	Chas. Price	Comp.	Page
A	1,000	$550	.....	76

Harrison Co., Robert, So. Boston, Mass.

Model	Cap.	Chas. Price	Comp.	Page
C	7,000	.....	.....	92
F	7,000	.....	.....	92

Harvey Motor Truck Co., Harvey, Ill.

Model	Cap.	Chas. Price	Comp.	Page
W F A	5,000	$2,500	.....	88
W H A	7,000	3,250	.....	92
W K A	10,000	4,000	.....	94

Hawkeye Mfg. & Rep. Co., Sioux City, Ia.

Model	Cap.	Chas. Price	Comp.	Page
H	2,500	$1,300	.....	81

Henderson Bros., No. Cambridge, Mass.

Model	Cap.	Chas. Price	Comp.	Page
C	1,200	$1,125	.....	77
D	2,000	1,500	.....	80

Hewitt-Lud. Auto Co., San Francisco, Cal.

Model	Cap.	Chas. Price	Comp.	Page
..	1,500	$1,650	.....	78
..	2,000	1,800	.....	80
..	3,000	2,250	.....	82
..	3,000	2,150	.....	82
..	5,000	2,250	.....	89
..	5,000	2,350	.....	89

Hoadley Bros., Gosport, Ind.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$3,000	.....	86

Hoover Wagon Co., York, Pa.

Model	Cap.	Chas. Price	Comp.	Page
15 A	1,500	$1,190	.....	78

Hurlburt Motor Truck Works, Harvey, Ill.

Model	Cap.	Chas. Price	Comp.	Page
..	3,000	$2,250	.....	82
..	4,000	3,000	.....	86
..	7,000	3,500	.....	92
..	10,000	4,250	.....	94
..	14,000	5,000	.....	97

Independent Mot. Co., Port Huron, Mich.

Model	Cap.	Chas. Price	Comp.	Page
F	2,000	$1,385	.....	80
G	4,000	1,850	.....	86

International Harvester Corp., Akron, O.

Model	Cap.	Chas. Price	Comp.	Page
M A	1,000	$600	.....	76
M W	1,000	710	.....	76
H	1,500	950	.....	78
F	2,000	1,500	.....	80

Indiana Truck Co., Marion, Ind.

Model	Cap.	Chas. Price	Comp.	Page
S	2,000	.....	.....	80
D	4,000	.....	.....	86
R	7,000	.....	.....	92
L	10,000	.....	.....	94

International Motor Co., New York, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
A B	2,000	$2,150	.....	80
A B	2,000	2,150	.....	80
A B	3,000	2,500	.....	83
A B	3,000	2,500	.....	83
A B	4,000	2,800	.....	86
A B	4,000	2,800	.....	86
A B	5,000	2,800	.....	89
A C	7,000	3,650	.....	92
..	10,000	4,800	.....	95
A C	11,000	4,250	.....	96
..	13,000	5,800	.....	96
A C	14,000	3,650	.....	97
A C	15,000	4,600	.....	97
A C	22,000	4,250	.....	97
A C	30,000	4,600	.....	97

Kearns Motor Truck Co., Beavertown, Pa.

Model	Cap.	Chas. Price	Comp.	Page
D	1,000	.....	.....	76

Kelly Springfield M. T. Co., Springfield, O.

Model	Cap.	Chas. Price	Comp.	Page
K 32	3,000	$2,250	.....	83
K 31	3,000	2,250	.....	83
K 35	5,000	3,000	.....	89
K 36	5,000	3,000	.....	89
K 40	7,000	3,650	.....	92
K 45	8,000	3,800	.....	93
K 50	10,000	4,400	.....	95
K 60	12,000	4,600	.....	96

Kentucky Wagon Mfg. Co., Louisville, Ky.

Model	Cap.	Chas. Price	Comp.	Page
M	1,250	$825	.....	77

A. R. King Mfg. Co., Kingston, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
..	7,000	$2,600	.....	92

Kissel Motor Car Co., Hartford, Wis.

Model	Cap.	Chas. Price	Comp.	Page
..	1,500	$950	.....	78
..	2,000	1,250	.....	80
..	4,000	1,875	.....	86
..	5,000	2,250	.....	89
..	7,000	2,850	.....	92

Kleiber & Co., Inc., San Francisco, Cal.

Model	Cap.	Chas. Price	Comp.	Page
A A	1,500	$1,600	.....	78
A	3,000	2,250	.....	83
B B	4,000	2,400	.....	86
B	5,000	2,750	.....	89
C	7,000	3,500	.....	92
D	10,000	4,500	.....	95

Knickerbocker M. Tk. Co., New York City.

Model	Cap.	Chas. Price	Comp.	Page
16	4,000	$2,200	.....	86
16	7,000	2,850	.....	92
16	10,000	4,000	.....	95

Knox Motors Associates, Springfield, Mass.

Model	Cap.	Chas. Price	Comp.	Page
36	6,000	$5,000	.....	90
35	.....	4,500	.....	97

H. J. Koehler Mot. Corp., Newark, N. J.

Model	Cap.	Chas. Price	Comp.	Page
K	2,000	$895	.....	80

Krebs Commercial Car Co., Clyde, O.

Model	Cap.	Chas. Price	Comp.	Page
40	3,000	$2,050	.....	83
60	4,000	2,375	.....	86
90	7,000	3,250	.....	92
98	10,000	4,000	.....	95

Lamson Truck & Tractor Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
1 S B	2,000	$1,550	.....	81
..	3,000	1,950	.....	84
..	5,000	2,450	.....	89
..	7,000	3,250	.....	93
..	10,000	4,150	.....	96

Wm. Landshaft & Son, Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
G 1	2,000	$1,250	.....	80
J 1	4,000	1,550	.....	86

Lane Motor Truck Co., Kalamazoo, Mich.

Model	Cap.	Chas. Price	Comp.	Page
A	1,500	$1,075	.....	78

Lange Motor Truck Co., Pittsburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
C	2,000	$1,950	.....	80
B	4,000	2,550	.....	86

Larrabee Deyo M. T. Co., Binghamton, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
M	2,000	$1,600	.....	80
N	3,000	2,000	.....	83
O	5,000	2,400	.....	89
P	5,000	2,475	.....	89
R	7,000	3,200	.....	92
S	7,000	3,300	.....	92

Lawson Mfg. Co., Pittsburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
35	1,000	.....	.....	77
..	1,500	.....	.....	78

Leocina Automobile Co., Newark, N. J.

Model	Cap.	Chas. Price	Comp.	Page
W	1,000	.....	.....	77

Lewis-Hall Iron Works, Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$2,000	.....	85
..	7,000	2,800	.....	92
..	7,000	2,800	.....	92
..	10,000	3,400	.....	94

Lincoln Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
D	1,500	$900	.....	78

Lippard Stewart M. C. Co., Buffalo, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
M	1,000	$1,000	.....	77
W	1,500	1,600	.....	78
H	2,000	2,000	.....	80
F	3,000	2,300	.....	83
G	4,000	2,600	.....	86

Locomobile Co. of Am., Bridgeport, Conn.

Model	Cap.	Chas. Price	Comp.	Page
B	6,000	$3,600	.....	90
B B	8,000	3,750	.....	94

Lombard Auto Trac. Tk. Co., New York.

Model	Cap.	Chas. Price	Comp.	Page
..	2,000	.....	.....	80
..	10,000	.....	$6,000	95

Maccar Truck Company, Scranton, Pa.

Model	Cap.	Chas. Price	Comp.	Page
L	3,000	$2,100	.....	83
H	5,000	2,600	.....	89
M	7,000	3,250	.....	92
U	11,000	4,150	.....	96

Manly Motor Corp., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
30	3,000	$1,800	.....	83
50	5,000	$2,250	.....	89

Mansur Motors Co., Haverhill, Mass.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$2,500	.....	86

Martin Truck & Body Corp., York, Pa.

Model	Cap.	Chas. Price	Comp.	Page
17	7,500	$750	.....	77

Maxwell Motor Co., Inc., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
25	500	$535	.....	76

Menominee M. T. Co., Menominee, Mich.

Model	Cap.	Chas. Price	Comp.	Page
E W	1,500	$1,295	.....	78
F W	2,000	1,575	.....	80
H	3,000	1,775	.....	83
D	4,000	2,240	.....	86
G	7,000	2,775	.....	92

Mills-Ellsworth Co., Keokuk, Ia.

Model	Cap.	Chas. Price	Comp.	Page
25 A	1,000	.....	$695	76

Mogul Motor Truck Co., St. Louis Mo.

Model	Cap.	Chas. Price	Comp.	Page
L M	3,000	$1,600	.....	83
L W	4,000	2,000	.....	86
L	5,000	2,250	.....	89
T	7,000	2,550	.....	92

Moon Buggy Co., Jos. W., St. Louis, Mo.

Model	Cap.	Chas. Price	Comp.	Page
B	3,000	$1,650	.....	83

Moreland Motor Tk. Co., Los Angeles, Cal.

Model	Cap.	Chas. Price	Comp.	Page
..	2,000	$1,500	.....	80
..	3,000	2,100	.....	83
..	5,000	2,750	.....	89
..	8,000	3,600	.....	93
16 J	10,000	4,250	.....	95

Morton Truck & Tr. Co., Harrisburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
..	6,000	.....	.....	90

Mercury Mfg. Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
P	1,000	$650	.....	77
..	.....	3,400	.....	96
A	.....	3,400	.....	97

Myers Machine Co., Sheboygan, Wis.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,650	.....	81
B	6,000	2,275	.....	91

Nash Motors Co., Kenosha, Wis.

Model	Cap.	Chas. Price	Comp.	Page
1016	1,500	$965	.....	78
2016	3,000	1,465	.....	83
4016 Qd..	4,000	2,850	.....	86

Nelson & Le Moon, Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
E 1	2,000	$1,700	.....	80
E 2	4,000	2,250	.....	86
E 3	6,000	2,950	.....	90
E 5	10,000	4,200	.....	95

New England Tk. Co., Fitchburg, Mass.

Model	Cap.	Chas. Price	Comp.	Page
C	3,000	$ 2,250	.....	83
D	4,000	2,350	.....	86

New London T. Co., The, N. London, Conn.

Model	Cap.	Chas. Price	Comp.	Page
25	1,000	$575	.....	77

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Niles Car & Mfg. Co., Niles, O.

Model	Cap.	Chas. Price	Comp.	Page
B	2,000	.....	.....	80
E	4,000	.....	.....	86

Old Reliable Motor Tk Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
..	3,000	$1,950	.....	83
..	4,000	2,750	.....	87
..	5,000	2,750	.....	89
..	6,000	3,250	.....	90
..	8,000	3,750	.....	93
..	8,000	3,750	.....	93
..	10,000	4,250	.....	95
..	12,000	4,500	.....	96
..	14,000	$5,000	.....	97

Pacific Metal Products Co., Torrence, Cal.

Model	Cap.	Chas. Price	Comp.	Page
..	5,000	$2,500	.....	89
..	10,000	4,500	.....	95

Packard Motor Truck Co, Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
1 E	2,500	$2,200	.....	81
1½ E	3,000	2,500	.....	83
2 E	4,000	2,800	.....	87
3 E	7,000	3,400	.....	92
4 E	9,000	3,800	.....	94
5 E	11,000	4,300	.....	96
6 E	13,000	4,550	.....	96

Packet M. C. Mfg. Co., Minneapolis, Minn.

Model	Cap.	Chas. Price	Comp.	Page
Packet	600	$325	.....	76

Palmer Meyer M. C. Co., St. Louis, Mo.

Model	Cap.	Chas. Price	Comp.	Page
..	2,000	$1,485	.....	81
..	3,000	1,800	.....	83
..	4,000	1,975	.....	87

Palmer Moore, Syracuse, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
K	1,500	$1,150	.....	78
M	2,000	1,350	.....	81

Peerless Motor Car Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
T C 2	4,000	$3,000	.....	87
T C 3	6,000	3,700	.....	90
T C 4	8,000	4,000	.....	94
T C 5	10,000	4,500	.....	95
T C 6	12,000	5,000	.....	96

Peansy M. Co. of Pittsburg, Pittsburg, Pa.

Model	Cap.	Chas. Price	Comp.	Page
15	1,000	$650	.....	77

Phoenix Mfg. Co., Eau Claire, Wis.

Model	Cap.	Chas. Price	Comp.	Page
Centiped	..	.....	.....	97

Pierce-Arrow Motor Car Co., Buffalo, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$3,000	.....	87
..	10,000	4,500	.....	95

Piggins Bros. Motor Tk. Co., Racine, Wis.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$2,750	.....	87

Pullman Motor Car Co., York, Pa.

Model	Cap.	Chas. Price	Comp.	Page
4-24	1,000	$725	.....	77

Rainier Motor Corp., New York City.

Model	Cap.	Chas. Price	Comp.	Page
..	1,000	$875	.....	77

Reading Standard Co., Reading, Pa.

Model	Cap.	Chas. Price	Comp.	Page
..	350	$305	.....	76

Reo Motor Car Co., Lansing, Mich.

Model	Cap.	Chas. Price	Comp.	Page
F	1,500	$925	.....	78
J	4,000	1,650	.....	87

Republic Motor Truck Co., Alma, Mich.

Model	Cap.	Chas. Price	Comp.	Page
Disp'ch 9	1,500	$750	.....	78
10	2,000	1,095	.....	81
11	3,000	1,275	.....	83
A	4,000	1,785	.....	87
T	6,000	2,675	.....	90

Rocco Motor Car Corp., Hannibal, Mo.

Model	Cap.	Chas. Price	Comp.	Page
A	1,000	.....	$750	77

Rowe Motor Co., Dowlingtown, Pa.

Model	Cap.	Chas. Price	Comp.	Page
C W	2,000	$2,450	.....	81
C D W	4,000	2,800	.....	87
D F W	6,000	3,400	.....	90
T W	10,000	4,500	.....	95

Royal Motor Truck Co, New York, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
B 1	2,000	.....	.....	81
B 2½	5,000	.....	.....	89
A 3½	7,000	.....	.....	93
A 5	10,000	.....	.....	95
A 6	12,000	.....	.....	96
A 7	14,000	.....	.....	97

Rush Delivery Car Co., Philadelphia, Pa.

Model	Cap.	Chas. Price	Comp.	Page
D	1,000	$735	.....	77

Sandow Truck Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
..	3,000	$1,800	.....	84
..	4,000	2,000	.....	87
..	4,000	2,350	.....	87
..	6,000	2,500	.....	90
..	6,000	3,000	.....	90

Sanford Motor Truck Co., Syracuse, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
O	1,500	$1,290	.....	78
R	2,500	1,850	.....	81
S	4,000	2,100	.....	87

Saxon Motor Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
..	400	$395	.....	76

Schacht M. T. Co., G. A., Cincinnati, O.

Model	Cap.	Chas. Price	Comp.	Page
..	3,000	$2,650	.....	84
..	4,000	2,800	.....	87
..	6,000	3,200	.....	90

Schleicher Motor V. Co., New York City.

Model	Cap.	Chas. Price	Comp.	Page
..	6,000	$3,500	.....	90
..	10,000	4,500	.....	95

Selden Truck Sales Co., Rochester, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
G	1,500	$985	.....	78
T X	2,000	1,385	.....	81
T	2,500	1,700	.....	82
J C	4,000	2,100	.....	87
J W L	4,000	2,350	.....	87
N L	7,000	3,150	.....	93

Service Motor Truck Co., Wabash, Ind.

Model	Cap.	Chas. Price	Comp.	Page
120	2,000	$1,375	.....	81
130	3,000	1,950	.....	84
140	4,000	2,250	.....	87
170	7,000	3,000	.....	93
175	7,000	3,250	.....	93
200	10,000	4,000	.....	95

Signal Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
F	2,000	$1,700	.....	81
H	3,000	2,000	.....	84
J	4,000	2,300	.....	87
M	7,000	3,000	.....	93
R	10,000	4,000	.....	95

Standard Motor Truck Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
70	4,000	$2,300	.....	87
65	7,000	3,000	.....	93
85	10,000	3,700	.....	95

Standard Tractor Co., Brooklyn, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
B	12,000	$3,450	.....	97
D	20,000	4,250	.....	97

Steel, W. M., Worcester, Mass.

Model	Cap.	Chas. Price	Comp.	Page
C	4,000	$2,250	.....	87
B	6,000	3,000	.....	90
B A	8,000	3,500	.....	94
A	10,000	4,000	.....	95

Stegeman Motor Car Co., Milwaukee, Wis.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$2,250	.....	84
..	6,000	2,700	.....	89
..	8,000	3,400	.....	93
..	10,000	4,100	.....	95
..	14,000	4,600	.....	..

Sterling Motor Tk. Co., Milwaukee, Wis.

Model	Cap.	Chas. Price	Comp.	Page
..	1,500	$895	.....	78
..	4,000	2,800	.....	87
..	7,000	3,400	.....	93
..	10,000	4,500	.....	95
..	14,000	4,750	.....	97

Stewart Iron Works, Covington, Ky.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$700	.....	81

Stewart Motor Corp., Buffalo, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
6	1,500	$795	.....	78
3	2,000	1,390	.....	81
4	3,000	1,485	.....	84

Studebaker Corporation, Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
S F	1,000	$785	.....	77
7	2,000	1,100	.....	81

Sullivan Motor Tk. Corp., Rochester, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
G	3,000	$1,600	.....	84
E	4,000	2,250	.....	87

Tegetmeier & Riepe, New York, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
M	3,000	$2200	.....	83

Thomas Auto T. Co., Inc., New York City.

Model	Cap.	Chas. Price	Comp.	Page
40	5,000	$2,700	.....	89

Tiffin Wagon Co., Tiffin, O.

Model	Cap.	Chas. Price	Comp.	Page
A	1,500	$1,190	.....	78
A W	2,000	1,450	.....	81
G W	3,000	1,790	.....	84
M W	5,000	2,500	.....	89
M C	5,000	2,360	.....	89
P W	7,000	2,900	.....	93
R W	10,000	4,250	.....	95
S W	12,000	4,550	.....	96

Tower Motor Truck Co., Greenville, Mich.

Model	Cap.	Chas. Price	Comp.	Page
..	4,000	$1,600	.....	87

Transport Tr. Co., Long Island City, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
T	10,000	$2,500	.....	97

Trumbull Motor Car Co., Philadelphia, Pa.

Model	Cap.	Chas. Price	Comp.	Page
16 D	500	$340	.....	76

Union Motor Truck Co., Bay City, Mich.

Model	Cap.	Chas. Price	Comp.	Page
B	5,000	$1,875	.....	89

United Motor Tk. Co., Grand Rapids, Mich.

Model	Cap.	Chas. Price	Comp.	Page
B S W	4,000	$2,250	.....	88
C S W	7,000	2,900	.....	93
..	8,000	3,200	.....	94
E S W	10,000	3,900	.....	95

United States Mot. Tk. Co., Cincinnati, O.

Model	Cap.	Chas. Price	Comp.	Page
E	5,000	$2,500	.....	90
H	5,000	2,800	.....	89
J	7,000	3,500	.....	96
D	7,000	3,200	.....	93
K	10,000	4,400	.....	95

Universal Service Co., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
G	3,000	$1,950	.....	84
D	4,000	2,800	.....	88
A	6,000	3,400	.....	91

Velie Motor Vehicle Co., Moline, Ill.

Model	Cap.	Chas. Price	Comp.	Page
23	1,500	$840	.....	..
25	3,000	2,250	.....	84
26	7,000	3,350	.....	93

Viall Motor Car Co., Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
B 1½	3,000	$1,750	.....	88
B 2	4,000	2,000	.....	88
..	10,000	3,500	.....	96

Vim Motor Truck Co., Philadelphia, Pa.

Model	Cap.	Chas. Price	Comp.	Page
20	1,000	$645	.....	77

Volts Brothers, Chicago, Ill.

Model	Cap.	Chas. Price	Comp.	Page
E	6,000	$2,750	.....	91
T	10,000	3,600	.....	96

Walter Motor Truck Co., New York City.

Model	Cap.	Chas. Price	Comp.	Page
..	10,000	$4,750	.....	96
..	12,000	5,000	.....	96
..	15,000	5,250	.....	97
..	24,000	5,000	.....	97

Watson Wagon Co., Canastota, N. Y.

Model	Cap.	Chas. Price	Comp.	Page
..	10,000	.....	.....	96

The White Co., Cleveland, O.

Model	Cap.	Chas. Price	Comp.	Page
G B B E	1,500	$2,100	.....	79
T B C	3,000	3,000	.....	84
T A D	6,000	3,700	.....	91
T C D	10,000	4,500	.....	96

Wichita Falls Mot. Co., Wichita Falls, Tex.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,350	.....	81
K	2,000	1,650	.....	81
L	3,000	1,800	.....	84
B	4,000	2,100	.....	88
M	4,000	2,100	.....	88
R	5,000	2,350	.....	90
O	7,000	3,250	.....	93
Q	10,000	3,850	.....	96

Wilcox Motor Co., H. E. Minneapolis, Minn.

Model	Cap.	Chas. Price	Comp.	Page
U	1,500	.....	.....	79
S	2,000	.....	.....	81
R	3,000	.....	.....	84
Q	4,000	.....	.....	88
P	7,000	.....	.....	93

Willingham's Sons, E. G., Atlanta, Ga.

Model	Cap.	Chas. Price	Comp.	Page
A	2,000	$1,350	.....	81
C	4,000	1,800	.....	87

Willys Overland Co., Toledo, O.

Model	Cap.	Chas. Price	Comp.	Page
75	750	$595	.....	76
83 B O E	1,200	800	.....	77

Wilson Co., J. C., Detroit, Mich.

Model	Cap.	Chas. Price	Comp.	Page
E	4,000	$2,350	.....	88
G	6,000	2,650	.....	91

Winther Motor Truck Co., Kenosha, Wis.

Model	Cap.	Chas. Price	Comp.	Page
47	4,000	$2,250	.....	88
67	6,000	3,100	.....	91
87	8,000	3,600	.....	94
127	12,000	4,500	.....	96

Witt-Will Co., Inc., Washington, D. C.

Model	Cap.	Chas. Price	Comp.	Page
W D 2	4,480	$2,250	.....	88

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GASOLINE SPECIFICATION DEFINITIONS

The appended explanations or definitions of the terms and abbreviations used in compiling the specifications published on the following pages should be understood by all readers that they may thoroughly comprehend the detail presented in the tabulations. Statement may be made here that the S. A. E. has adopted a nomenclature that is intended to simplify the technical mechanical terms designating the different units and parts of automobile chassis as applied by engineers, which the manufacturers and their sales and service organizations are expected to use so far as is possible.

There is reasonable ground for assumption that through this usage the general public will be educated to the terms, so that eventually there will be practically uniform acceptance of them, and there will be common recognition of a type or method or size or system.

The fact that the specification items cannot be described by the one series of terms requires that the reader familiarize himself with the definitions, and when these are understood the detail can be quickly comprehended and comparisons can be made. One will note that the arrangement follows through the chassis systematically, taking the engine, clutch, transmission gearset, method of drive, rear axle, springs, wheels, tires and means of control in that order. The definitions follow:

MAKE—The trade or market name by which the chassis is known.

MODEL—This indicates the figures or letters by which the sizes are differentiated by the maker. In some instances there is no indication.

CAPACITY—This states the maximum load capacity in pounds, and assumes that the body weight will be carried in addition.

CHASSIS PRICE—The manufacturers have been asked to carefully revise these quotations. In some instances, where complete vehicle prices are given, these are so stated.

S. A. E. RATING—This gives the horsepower as found by the standard formula, which is the same as the A. L. A. M. and the N. A. C. C. formulae. In most instances these ratings will be increased in practical service, in some cases in excess of 40 per cent.

ENGINE CYLINDERS—This gives the number only and without exception these are all four-cycle. The type, whether L head, T head or I head, is not indicated.

HOW CAST—This specifies whether the cylinders are cast singly, in pairs, in triple units or in block form, but does not indicate the manner of casting the crank cases. In all instances where the cooling is by water the cylinder jackets are cast integral.

BORE-STROKE—This specifies the cylinder bore and the piston stroke in inches.

VALVE LOCATION—This specifies the side of the engine on which the valves are located, this construction requiring but a single camshaft, but where the term T head is used this means that the valves are on either side, but the exhaust and intake are not differentiated.

NUMBER MAIN BEARINGS—This does not indicate the type of bearings, but as a rule these are plain, annular ball bearings, being very rarely used

MAXIMUM R. P. M.—This states the highest or maximum engine speed claimed by the manufacturer. The vehicles or engines may be governed to considerably lower speeds.

LUBRICATION—Splash, defines a simple splash system without pump; splash and pressure, defines a system where the oil is supplied by pumpage and distributed in part by splash; pressure, defines any system where the lubricant is supplied wholly by pumpage; fuel, where the oil is mixed with the gasoline and injected through the carburetor.

COOLING SYSTEM—Water thermo, indicates cooling by a thermo-syphon system of water circulation; water pump, by a forced or pressure water circulation; in both instances through radiators; air, cooling by forced circulation of air.

RADIATOR—Tubular indicates any form of plain tube; fin.-t. cast., any form of finned tube cooling section and cast top and bottom tanks; fin.-t. sh., for finned tube cooling section and sheet metal tanks; cell. cast., for cellular cooling section and cast metal tanks; cell. sh., for cellular cooling section and sheet metal tanks; honeycomb and zig-zag tube cooling sections are classified as cellular.

CARBURETOR—The maker's name, and, in some instances the type, is given.

IGNITION—The name of the maker of the system, usually a magneto, and in some instances the type, is given.

CONTROL—This refers to the control of the ignition system, fixed indicating a fixed point for firing the cylinders; hand, for manual adjustment of the firing point, and auto, for automatic advance of retardation.

GOVERNOR—This specifies the manner of driving a governor, if this equipment is included, whether from the engine, gear set or vehicle wheel.

SPEED, M. P. H.—This specifies the maximum vehicle speed with the highest gear ratio.

CLUTCH TYPE—The designations are cone, which may be either fabric faced or metal to metal; dry disc (multiple disc) or dry plate which are used without lubricant; wet disc, which is used with lubricant; expanding shoe or contracting band.

TRANSMISSION GEARSET—This specifies whether selective, progressive, planetary or friction type.

LOCATED, SPEEDS—This indicates the location of the transmission gearset, Unit M as a unit with the engine; Unit A as a unit with the rear axle; Amid. as amidships, or independent of the engine or axle, and the numeral gives the number of forward speed ratios.

DRIVEN BY—Top worm, defines the David Brown type construction of worm shaft and worm wheel; int. gear, defines internal gear drive; bevel, defines bevel pinion and master gear; double chain, defines double side chains; double red., defines double reduction gearing; front worm, defines front wheels driven by worm shaft and worm wheel; front int. gear, defines front wheels driven by internal gears; four worm, defines four wheels driven by worm shafts and worm wheels; four int. gear, defines four wheels driven by internal gears; four bevel, defines four wheels driven by bevel gears.

RATIO GEAR REDUCTION—Specifies the reduction from the engine to the rear wheels when driven with the high gear ratio.

TORQUE TAKEN BY—This indicates whether the torque is taken by the springs, torque arm or member, torsion rods, radius rods or sub-frame.

PROPELLED BY—This defines whether the driving effort is given through the springs, torque member or radius rods.

SPRINGS FORWARD—This gives ½-ell. for semi or half-elliptical; elliptic for full elliptical; cross ½ ell. for transverse semi-elliptical.

SPRINGS, REAR—This gives ½-ell. for semi or half-elliptical; elliptic for full elliptical; platform for two longitudinal and one transverse semi-elliptic springs; cantilever for semi-elliptical installed to give cantilever suspension; ¾-ell for three-quarters elliptical, and jack is added for an auxiliary or cross spring.

WHEELBASE—Chassis length in inches between centres of front and rear axles.

TIRE TYPE—Pneu. for pneumatic; solid for cushion or solid bands; P. and S. for pneumatic and solid or mixed equipment; opt. for optional equipment.

TIRE SIZES—The forward tire sizes are given first and the rear last, with d added to the rear sizes to indicate dual shoes.

DRIVER'S SEAT—Right or left indicates the side of the chassis at which the seat and steering column are located.

CONTROL LEVERS—Right, left or centre, define the location of the gear shifting and emergency brake hand levers.

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 4000 TO 5000 POUNDS.

Make	Universal	Viall	Viall	Wichita	Wichita	Wilcox	Wilson	Winther	Witt-Will	Bethlehem	Barker
Model	D	B 1½	B 2	B	M	Q	E	47	W D 2	B-1	V
Capacity	4000	3000	4000	4000	4000	4000	4000	4000	4480	4500	5000
Chassis Price	$2800	$1750	$2000	$2100	$2100	.....	$2350	$2250	$2350	$1665	$1800
S. A. E. Rating	25.60	18.00	28.00	19.61	19.61	29.00	27.25	22.50	27.20	27.00	25.60
Engine Cyls.	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Pairs	En block	Block	Block	Block	Pairs	Block	Block	Block	Pairs	Block
Bore, Stroke	4x5½	3¾x5½	4¼x5½	3½x5	3½x5	4¼x5	4¼x5¼	3¾x5	4⅛x5¼	4x4½	4x5
Valve Location	Optional	Right	Right	Left	Left	Right	Left	Left	Left	Left	Left
No. Main Bear.	Three	Three	Three	Two	Two	Three	Three	Four	Three	Three	Three
Max. R. P. M.	1123	1500	1500	1050	1280	1200	1100	1800	1085	1200	1500
Lubrication	Cir. spl.	Spl., pres.	Spl., pres.	Spl. pres.	Spl. pres.	Cir. spl.	Spl. pres.	Pres.	Cir. spl.	Spl., pres.	Spl. pres.
Cool. System	Centrifugal	Water pump	Water pump	Thermo	Thermo	Centrifugal	Centrifugal	Water pump	Centrifugal	Thermo	Thermo
Radiator Type	Cell. sheet	Cell. sheet	Cell. sheet	Cell. sheet	Cell. sheet	Cell. cast	Fin. cast	Cellular	Cellular	Cellular	Cell. sheet
Carburetor	Optional	Stromberg	Stromberg	Stromberg	Stromberg	Optional	Marvel	Master	Zenith	Schebler	Stromberg
Ignition, Make	Eisemann	Bosch Du4	Bosch Du4	Bosch	Bosch	Bosch	Eisemann	Eisemann	Eisemann	Bosch	Eisemann
Type, Control	Dual, hand	Hand	Hand	Single, hand	Single, hand	Single, hand	Single, fixed	.....	Single, auto	Hand	Single, auto
Governor Drive	Motor	.....	.....	.....	.....	Motor	Motor	Engine	Motor	.....	.....
Speed, M. P. H.	13	15	15	13	13	14	15	16	15	15	20
Clutch Type	Cone	Dry disc	Dry disc	Cone	Cone	Cone	Cone	Dry plate	Dry disc	Dry disc	Dry plate
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Amid., three	Unit power	Unit	Unit J, three	Amid., three	Amid., 3	Amid., 3	Three	Unit M, three	Unit, M	Unit M, 4
Driven by	Double chain	Top worm	Top worm	Double chain	Top worm	Top worm	Top worm	Internal gear	Top worm	Internal gear	Top worm
Ratio Gear Red.	9.25-1	7.75-1	7.75-1	8.24-1	10.67-1	8.70-1	8.60-1	.....	7.75-1	8.30-1	.....
Tor. Taken by	Radius rod	Springs	Springs	.....	Springs	Springs	Springs	.....	Springs	Springs	Springs
Propelled by	Radius rod	Springs	Springs	Radius rod	Springs	Springs	Springs	.....	Springs	Springs	Springs
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	132	144	144	118	118	150	144	144	144	144	136
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x4, 36x5	36x3, 36x5	36x4, 36x7	34x3½, 34x3d	36x3½, 36x6	36x4, 36x3½d	36x4, 36x4d	34x4, 34x6	36x3½, 36x3½d	34x4, 34x6	36x4, 36x7
Driver's Seat	Left	Left	Left	Right	Right	Left	Left	.....	Left	Left	Left
Control Levers	.....	Left	Left	Centre	Centre	Centre	Centre	.....	Centre	Centre	Centre

LOAD CAPACITY, 5000 POUNDS.

Make	Brinton	Chase	Continental (8)	Corbitt	Croce	D-E	De Kalb	Denby	Doane	Gersix	Gramm-Bern.	Harvey
Model	F	B	W 20	B	18	.....	E 2½	15	1916	G	.....	W F A
Capacity	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Chassis Price	$2250	$2475	$2000	$2650	$2600	$2000	$2450	$2150	*$3000	$2650	$2900	$2500
S. A. E. Rating	35.00	27.20	27.25	27.50	25.60	27.20	27.20	22.50	28.9	30.00	29.00	29.00
Engine Cyls.	Four	Four	Four	Four	Four	Four	Four	Four	Four	Six	Four	Four
How Cast	Block	Block	Block	Block	Block	Block	Block	Block	Pairs	Block	Pairs	Block
Bore, Stroke	5¼x5¼	4⅛x5½	4⅛x5¼	4⅛x5¼	4x5	4⅛x5½	4⅛x5¼	3¾x5	4¼x5¾	3½x5¼	4¼x5¾	4¼x5½
Valve Location	Side	Right	.....	Left	Right	Left	Left	Right	Right	Left	Left	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Four	Three	Three
Max. R. P. M.	.....	1200	1200	1500	1000	1250	1500	1275	1000	1850	1100	1000
Lubrication	Cir. spl.	Cir. spl.	Spl. pres.	Cir. spl.	Spl. pres.	Spl., pres.	Spl. pres.	Cir. spl.	Cir. spl.	Force feed	Cir. spl.	Pressure
Cool. System	Pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Pump	Centrifugal	Thermo	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Tubular	Fin. sheet	Fin. sheet	Fin.-t. cast.	Sq.-t. cast.	Fin-T-sh.	Fin. sheet	Cell. cast.	Fin. cast.	Cellular	Fin.-t. cast.	Sq.-t. sheet
Carburetor	Stromberg	Stromberg	Stromberg	Stromberg	Rayfield	Zenith	Master	Stromberg	Schebler	Stromberg	Zenith	Stromberg
Ignition, Make	Bosch	Bosch	Eisemann	Eisemann	Bosch	Dixie	Eisemann	Eisemann	Bosch	Bosch	Eisemann	Eisemann
Type, Control	.....	Single, fixed	Single, hand	Single, hand	Single, hand	Hand	Single, fixed	Single, fixed	Dual, hand	Fixed spark	Dual, hand	Single, auto
Governor Drive	Motor	Motor	Motor	Motor	.....	Gearset	Motor	Motor	Motor	Suction gov.	Motor	Duplex
Speed, M. P. H.	.....	14	14	14	15	15	12	12.50	14	15	15	16
Clutch Type	Dry disc	Mult. disc	Dry disc	Dry disc	Cone	Dry plate	Cone	Dry plate	Dry disc	Dry plate	Dry disc	Dry disc
Trans. Gearset	.....	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Ind. C.	Selective
Located, Speeds	.....	Unit M, three	Unit M, 3	Unit M, three	Amid., three	Unit, three	Amid, three	Unit M, three	Unit M, three	Unit M, three	Amid., three	Amid., 4
Driven by	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm	Worm	Int. gear	Double chain	Worm gear	Top worm	Top worm
Ratio Gear Red.	8.75-1	7.75-1	.....	8.67-1	.....	9.33-1	8.50-1	10.90-1	7.65-1	9.66-1	7.75-1	7.75-1
Tor. Taken by	.....	Springs	.....	Springs	Springs	Springs	Springs	Springs	Torque arm	Springs	Springs	Springs
Propelled by	.....	Springs	.....	Springs	Springs	Springs	Springs	Springs	Radius rod	Springs	Springs	Springs
Springs, For	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	¼ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	138	160	Optional	148	130	144	136	144	144	150	156	150
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	.....	36x4, 36x4d	36x6, 36x4d	36x4, 36x4d	36x5, 36x6	36x3½, 36x7	36x4, 36x5	36x4, 36x7	36x4, 36x7	36x4, 36x7	36x4, 36x4d	36x4, 36x7
Driver's Seat	.....	Right	Optional	Right	Left	Left	Left	Left	Right	Left	Left	Left
Control Levers	.....	Centre	Centre	Centre	Right	Centre	Centre	Centre	Centre	Centre	Centre	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 5000 POUNDS.

Make	Hewitt Ludlow	Hewitt-Ludlow	Kelly Spring.	Kelly Spring.	KisselKar	Kleiber	Larrabee	Larrabee	Maccar	Mack	Manly	Mogul
Model	.....	.....	K 35	K 36	.....	B	P	O	H	A B Tractor	50	L
Capacity	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Chassis Price	$2250	$2350	$3000	$3000	$2350	$2750	$2475	$2400	$2600	$2800	$2250	$2250
S. A. E. Rating	23	23	22.50	22.5	28.90	27.20	27.20	27.20	32.40	25.6	25.60	27.20
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	.....	.....	Block	Block	Block	Block	Block	Block	Pairs	Pairs	Pairs	Block
Bore, Stroke	3¾x5½	3¾x5½	3¾x5¼	3¾x5¼	4⅛x5½	4⅛x5¼	4⅛x5¼	4⅛x5¼	4½x5½	4x5	4x5¾	4⅛x5¼
Valve Location	.....	.....	Left	Left	Right	Left	Left	Left	Left	Right	Right	Left
No. Main Bear	.....	.....	Three	Three	Three	Three	Three	Three	Three	Three	Three	.....
Max. R. P. M.	.....	.....	1350	1250	1120	1200	1200	1200	1000	1160	1000	1200
Lubrication	.....	.....	Pressure	Pressure	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.	Cir. Spl., Grav.	Circulating	Spl. pres.
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	.....	.....	Cell. sheet	Cell. cast	Sq.-t. sheet	Cellular	Fin. cast.	Fin. cast	Cell. sheet	Cellular	Tube cast	Cell. cast.
Carburetor	Stromberg	Stromberg	Rayfield	Rayfield	Stromberg	Schebler	Schebler	Schebler	Stromberg	Optional	Zenith	Carter
Ignition, Make	Remy	Remy	Eisemann	Eisemann	Eisemann	Bosch	Bosch	Bosch	Bosch	Splitdorf	Bosch	Bosch
Type, Control	.....	.....	Single, fixed	Spark	Single, hand	Hand	Single, hand	Single, hand	Single, hand	Single, hand	Variable	Single fixed
Governor Drive	.....	.....	Motor	Motor	Motor	Motor	Motor	Motor	Motor	Camshaft	Timing gears	Motor
Speed, M. P. H.	.....	.....	11.9	11.5	14	14	14	14	13	11.78	14	15
Clutch Type	Cone	Cone	Cone	Cone	.....	Wet disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry plate
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Ind. clutch	Selective
Located, Speeds	....., three	....., three	Unit J, three	Unit J, 3	Unit M, four	Amid., three	Unit M, three	Unit M, 3	Unit M, three	Motor	Unit, three	Amid., three
Driven by	.....	.....	Double chain	Worm	Top worm	Top worm	Top worm	Top worm	Top worm	Double chains	Worm	Double chain
Ratio Gear Red.	.....	.....	11.30-1	11.66-1	8.70-1	8.67-1	8.66-1	8.66-1	8.50-1	10.53-1	7.50-1	7.75-1
Tor. Taken by	.....	.....	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Torque tube	Torsion rods	.....
Propelled by	.....	.....	Radius rod	Radius rod	Springs	Springs	Springs	Springs	Radius rod	Radius rods	Radius rods	Radius rod
Springs, For	.....	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	.....	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	140	140	144	144	166	150	166	154	162	120	168, 180	138
Tire Type	.....	.....	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x3½, 36x7	36x3½, 36x7	36x4, 36x4d	36x4, 36x4d	34x4, 36x4d	36x4, 36x4d	36x4, 36x6	36x4, 36x6	36x4, 36x4d	.....	36x4, 40x7	36x5, 38x4d
Driver's Seat	Left	Left	Left	Left	Left	Right	Left	Left	Left	Left	Left	Left
Control Levers	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 5000 POUNDS.

Make	Moore	Moreland	Old Reliable	Royal	Stegeman	Stegeman	Thomas	Tiffin	Tiffin	Union	U. S.	Z & L
Model	.....	.....	.....	B 2½	.....	Special	40	M W	M C	B	H	.....
Capacity	5000	5000	5000	5000	6000	5000	5000	5000	5000	5000	5000	5000
Chassis Price	$2500	$2750	$2750	.....	$2700	$2500	$2700	$2500	$2360	$1875	$2800	$2450
S. A. E. Rating	32.40	32.40	29.00	25.60	40	40	27.20	27.20	27.20	25.60	27.25	25.60
Engine Cyls	Four	Four	Four	Four	Six	Six	Four	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Pairs	Block	Block	Block	Block	Block	Block	Block	Block	Block
Bore, Stroke	4½x5½	4¼x5	Opposite	4x6	3½x5¼	3½x5¼	4⅛x5½	4⅛x5¼	4⅛x5¼	4x6	4⅛x5¼	4x6
Valve Location	Left	Left	Three	Left	Left	Left	Left	Left	Left	Left	Left	Left
No. Main Bear	Three	Three	.....	Three	Three	Three	Three	Three	Three	Four	Three	Four
Max. R. P. M.	1100	1050	.....	1600	1100	1100	1100	1000	1000	Six	1200	1200
Lubrication	Cir. spl.	Cir. spl.	Centrifugal	Spl. pres.	Spl. pres.	Spl. pres.	Spl., pres.	Spl. pres.	Spl. pres.	Centrifugal	Cir. spl.	Spl., pres.
Cool. System	Centrifugal	Centrifugal	Sq.-t. sheet	Water thermo	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	.....	Centrifugal	Centrifugal
Radiator Type	Cell. sheet	Cell. sh.	Stromberg	Cellular	Cell. cast	Cell. cast	Cell. sheet	Fin. sheet	Fin. sheet	Fin. cast	Cellular	Cell. cast
Carburetor	Master	Optional	Bosch	Stromberg	Rayfield	Rayfield	Stromberg	Schebler	Schebler	Schebler	Stromberg	Stromberg
Ignition, Make	Splitdorf	Optional	Single, hand	Bosch	Westinghouse	Westinghouse	Bosch	Bosch	Bosch	Eisemann	Bosch	Bosch
Type, Control	Dual, hand	Single, hand	.....	Single, fixed	Single, auto.	Single, auto.	Single, fixed	Dual, hand	Dual, hand	Single, hand	Dual, hand	Dual, hand
Governor Drive	Motor	Motor	.....	Motor	Motor	Motor	Duplex	Motor	Motor	.....	Motor	Duplex
Speed, M. P. H.	17	14	Wet disc	18	14	15	14	12	12	.....	15	14
Clutch Type	Cone	Dry plate	Selective	Dry disc	Dry disc	Dry disc	Dry disc	Cone	Cone	Wet disc	Cone	Dry plate
Trans. Gearset	Selective	Selective	Unit J, three	Ind. clutch	Selective	Selective	Selective	Selective	Selective	Selective	Ind. C.	Ind. clutch
Located, Speeds	Unit J, three	Unit M, four	Double chain	Amid., three	Unit M, three	Unit M, three	Unit M, three	Amid., three	Amid., three	Unit M, three	Amid., three	Unit M, three
Driven by	Double chain	Top worm	.....	Top worm	Top worm	Top worm	Worm	Top worm	Chain	Internal gear	Top worm	Worm
Ratio Gear Red.	6.50-1	7.00-1	.....	.....	10.67-1	9.25-1	8.50-1	8.80-1	8.80-1	7.75-1	8.75-1	8.75-1
Tor. Taken by	.....	Springs	Radius rod	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs
Propelled by	Radius rod	Radius rod	.....	Springs	Rad. rod	Springs	Springs	Springs	Radius rod	.....	½ elliptic	½ elliptic
Springs, For	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	152	144	160
Wheelbase	162½	168	Solid	132	160	142	150	140	140	Solid	Solid	Solid
Tire Type	Solid	Solid	34x4, 36x4d	Solid	Solid	Solid	Solid	Solid	Solid	39x4, 39x6	34x4, 36x4d	36x4, 36x7
Tire Sizes	36x4, 36x3½d	34x4, 34x4d	Right	36x4½, 36x6	34x4, 36x5d	40x4, 40x6	34x4, 34x4d	36x4, 36x3½d	36x4, 36x3½d	Right	Left	Left
Driver's Seat	Left	Right	Right	Right	Left	Left	Left	Left	Left	Centre	Centre	Centre
Control Levers	Centre	Centre	Right	Right	C. & L.	C. & L.	Centre	Centre	Centre			

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 5000 AND 6000 POUNDS.

Make	U. S.	Wichita	A & B	Avery	Beech Creek	Blair	Chase	Coleman	Duplex	F. W. D.	Horner	Knox Tractor
Model	E	R	:.....	B	3 A	2 D	X	H	D	B	F G	36
Capacity	5000	5000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Chassis Price	$2500	$2350	.....	$3200	$3850	$3250	$2800	$3000	$3300	$4000	.....	$5000
S. A. E. Rating	27.25	22.50	42.64	36.15	29.00	28.90	27.20	36.15	29.00	36.15	32.40	40.00
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Block	Pairs	Single	Pairs	Pairs	Block	Pairs	Block	Pairs	Pairs	Pairs
Bore, Stroke	4½x5½	3¾x5¼	5.17x4¾	4¾x5	4¼x5¾	4¼x5¾	4½x5½	4¾x5½	4½x5½	4¾x5½	4½x5½	5x5½
Valve Location	Left	Left	Right	Left	Left	Left	Right	Opposite	Right	Opposite	Left	Head
No. Main Bear.	Three	Three	Three	.....	Three	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1200	1200	.....	1200	1000	1100	1200	1000	1250	1100	1100	.....
Lubrication	Cir. spl.	Pump spl.	Cir. spl.	Spl. pres.	.....	Cir. spl.	Cir. spl.	Pressure	Cir. spl.	Spl. pres.	Spl. pres.	Pressure
Cool. System	Centrifugal	Centrifugal	Gear	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Cellular	Cell. sheet	Fin. sheet	Cell. sheet	Cell. sheet	2-2 tube	Fin. sheet	Fin. sheet	Fin. sheet	Sq.-t. sheet	Fin. cast.	Cell. sheet
Carburetor	Stromberg	Stromberg	Schebler	Rayfield	King	Optional	Stromberg	Schebler	Schebler	Stromberg	Stromberg	Zenith
Ignition, Make	Bosch	Bosch	Bosch	Eisemann	Eisemann	Optional	Bosch	Bosch	Bosch	Eisemann	Bosch	Eisemann
Type, Control	Hand and foot	Single, hand	Dual, hand	Dual, auto.	Single, hand	Optional	Single, fixed	Single, hand	Single	Single, hand	Duplex, hand	Single, hand
Governor Drive	Motor	Motor	.....	Motor	Motor	Motor	Engine	Motor	Duplex	Motor	Motor	.....
Speed, M. P. H.	15	13	.....	13	12	12	12	12	10	14	14	.....
Clutch Type	Cone	Cone	.....	Dry plate	Dry plate	(Md.) Cone	Mult. disc	Cone	Dry disc	Wet disc	Dry disc	Dry plate
Trans. Gearset	Ind. clutch	Selective	Electric	Selective	Selective	Ind. C.	Selective	Selective	Selective	Ind. C.	Selective	Selective
Located, Speeds	Amid., 3	Amid., three	Amid, 2	Unit J, three	Amid., six	Amid., three	Unit M, three	Unit J, three	Unit M, four	Amid., three	Amid., three	Unit J, three
Driven by	Side chains	Top worm	Int.-g.-f.	Double chain	Bevel	Top worm	Top worm	Double chain	Int. gear, four	Bevel, four	Top worm	Double chain
Ratio Gear Red.	8.16-1	8.75-1	28.00-1	3.50-1	2.30-1	8.67-1	11.75-1	.....	8.00-1	8.90-1	9.40-1	13.50-1
Tor. Taken by	.....	Springs	Rad. rod	.....	Springs	Radius rod	Springs	.....	Torsion arm	Springs	Springs	Radius rod
Propelled by	Radius rods	Springs	Rad. rod	Rad. rod	Radius rod	Radius rod	Springs	Rad. rod	Radius rod	Torsion rod	Radius rod	Radius rod
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	Elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	Platform	½ elliptic	Platform	Platform	½ elliptic
Wheelbase	144	118	144	128	122	121, 135, 144	160	138	130	124	145	108½
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	34x4, 36x4d	36x4, 36x7	48x3½, 48x3½d	38x5, 38x4d	36x6, 36x6	36x4, 36x4d	36x4, 36x5d	36x5, 36x5d	36x5, 36x5	36x6, 36x6	36x5, 40x4d	36x4, 38x6d
Driver's Seat	Left	Right	Right	Right	Right	Right	Right	Right	Left	Right	Left	Left
Control Levers	Centre	Centre	Right	Centre	Centre	Right	Centre	Right	Centre	Right	Centre	Centre

LOAD CAPACITY, 6000 POUNDS.

Make	Morton	Nel. & Le Moon	Old Reliable	Peerless	Republic	Riker	Rowe	Sandow	Sandow	G. A. Schacht	Schleicher	Steel
Model	.....	E 3	.....	T C 3	T	B	D F W	.....	.....	3-Ton	.....	B
Capacity	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Chassis Price	.....	$2950	$3250	$3700	$2675	$3600	$3400	$3000	$2500	$3200	$3500	$3000
S. A. E. Rating	36.15	32.40	29.00	32.40	29.00	29.00	29.00	32.40	32.40	29.00	29.00	40.00
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Block	Pairs	Block	Pairs	Pairs	Pairs	Pairs	Block	Pairs	Pairs
Bore, Stroke	4¾x6¾	4½x5½	4¼x6	4½x6½	4¼x5½	4¼x6	4¼x5	4½x5½	4½x5½	4¼x5½	4¼x5½	5x5
Valve Location	Left	Left	Left	Opposite	Right	Opposite	Opposite	Left	Left	R. & H.	Right	Head
No. Main Bear.	Three	Three	Four	Three	Three	Five	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1250	1000	.....	925	1100	1350	1000	1000	1000	1000	1200	950
Lubrication	Pressure	Cir. spl.	.....	Spl.	Spl. pres.	Spl. pres.	Pressure	Cir. spl.	Cir. spl.	Spl. pres.	.....	.....
Cool. System	Centrifugal	Centrifugal	Centrifugal	Gear	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Cell. sheet	Sq.-t. sheet	Sq.-t. sheet	Fin. sheet	Fin. sheet	Tubular	Sq.-t. sheet	Cell. sheet	Cell. sheet	Cell. cast.	Sq.-t. sheet	Cell. sheet
Carburetor	Carter	Rayfield	Stromberg	Stromberg	Stromberg	Riker	Rayfield	Stromberg	Stromberg	Schebler	Stromberg	Stromberg
Ignition, Make	Dixie	Bosch	Bosch	Remy	Bosch	Bosch	Bosch	Bosch	Bosch	Bosch DU4	Bosch	At. Kt.
Type, Control	Dual, hand	Dual, hand	Single, hand	Dual, hand	Single, hand	Duplex, hand	Single	Single, hand	Single, hand	Single, hand	Dual, hand	Single, auto
Governor Drive	Motor	Motor	Duplex	Motor	Suction	Motor	Motor	Motor	Motor	Motor	.....	Motor
Speed, M. P. H.	25½	12	.....	14½	11	14½	.....	12	12	12	25	11
Clutch Type	Wet disc	Dry disc	Dry disc	Cone	Dry disc	Cone	.....	Dry disc	Dry disc	Cone	.....	Wet disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	.....	Ind. clutch
Located, Speeds	Amid., four	Unit M, three	Unit M, three	Unit J, four	Unit M, four	Amid., four	Amid., four	Unit M, three	Unit M, three	Amid., three	.....	Unit J, three
Driven by	Top worm, 4	Top worm	Worm	Double chain	Int. gear	Top worm	Top worm	Double chain	Top worm	Top worm	Double chain	Double chain
Ratio Gear Red.	5.60-1	8.75-1	8.75-1	7:40-1	10-1, optional	8.75-1	.....	7.00-1	9.45-1	9.67-1	.....	9.21-1
Tor. Taken by	Springs	.....	Springs	Springs	Springs	Torsion arm	Springs	.....	Springs	Torsion tube	.....	.....
Propelled by	Springs	.....	Springs	Radius rod	Springs	Radius rod	Radius rod	Radius rod	Springs	Radius rod	Radius rod	Radius rod
Springs, For	.....	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	.....
Springs, Rear	.....	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	.....
Wheelbase	112	Optional	150	151	165	150, 170, 190	156	186	186	168	150	127
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	40x6, 40x6	36x5, 38x5d	34x5, 36x5d	36x4, 40x4d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 40x5d	38x5, 38x5d	34x4½, 34x3½d	38x6, 40x5d
Driver's Seat	Right	Right	Right	Right	Left	Right	Left	Right	Right	Left	Right	Right
Control Levers	Right	Centre	Centre	Right	Centre	Right	Centre	Centre	Centre	Centre	Right	Right

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 6000 AND 7000 POUNDS.

Make	Universal	Volta	White	Wilson	Winther	Wisconsin	Acme	Acason	Armleder	Atterbury	Available	Bessemer
Model	A	E	T A D	G	67	B	C	.....	K W	6-D	.....	E
Capacity	6000	6000	6000	6000	6000	6000	7000	7000	7000	7000	7000	7000
Chassis Price	$3400	$2750	$3700	$2650	$3100	$2275	$3000	.....	$3500	$3375	$3200	$3100
S. A. E. Rating	25.60	32.40	22.50	27.20	25.60	25.60	22.40	28.90	32.50	32.40	32.40	32.40
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Block	Block	Block	Pairs	Pairs	Pairs	Pairs	Pairs	Pairs	Pairs
Bore, Stroke	4x5½	4½x5½	3¾x5½	4½x5¼	4x6	4x5¼	4½x5½	4¼x5¾	4½x5½	4½x5½	4½x5½	4½x5½
Valve Location	Opposite	Left	Right	Left	Left	.....	Left	.....	Left	Left	Left	Left
No. Main Bear.	Three	Three	Two	Three	Three	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1057	1000	.....	.....	1750	.....	1200	1200	1500	1125	1200	876
Lubrication	Cir. spl.	Cir. spl.	Spl. pres.	Spl., pres.	Pres.	Spl. pres.	Spl., pres.	Splash	Cir. spl.	Cir. spl.	Cir. spl.	Cir. spl.
Cool. System	Centrifugal	Centrifugal	Centrifugal	Water pump	Water pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Water pump
Radiator Type	Cell. sheet	Cell. sheet	Cell. sheet	Fin-T-cast	Cell. cast	Cell. cast	Fin. cast.	Fin. cast.	Fin. cast.	Fin. cast.	Cell. sheet	Cell. cast
Carburetor	Optional	Rayfield	White	.....	Master	.....	Rayfield	Schebler	Schebler	Zenith	Stromberg	Rayfield
Ignition, Make	Eisemann	Eisemann	Eisemann	.....	Eisemann	Eisemann	Eisemann	Eisemann	Bosch	.....	Bosch	Bosch
Type, Control	Dual, hand	Dual, auto	Single, hand	H-t-m	.....	.....	Single, fixed	Single, hand	Single, hand	Double, hand	Dual, fixed	Hand
Governor Drive	Motor	.....	.....	Motor	.....	.....	Motor	.....	.....	Motor	Motor	Motor
Speed, M. P. H.	10½	15	.....	14	14	15	14	14	13	13	14	13
Clutch Type	Cone	Wet disc	Wet plate	Cone	Dry disc	Cone	Dry plate	Dry disc	Dry disc	Dry disc	Dry disc	Cone
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	.....	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Unit J, three	Unit J, three	Amid., four	Amid., three	Three	Centre	Amid., three	Unit M, four	Unit M, three	Unit M, four	Unit M, three	Amid., three
Driven by	Double chain	Double chain	Double chain	Worm	Internal gear	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm
Ratio Gear Red.	10.33-1	6.60-1	.....	.....	.....	.....	10.33-1	10.33-1	8.75-1	10.30-1	10.33-1	7.80-1
Tor. Taken by	Radius rod	Radius rod	.....	.....	.....	.....	Springs	Springs	Springs	Springs	Springs	Springs
Propelled by	Radius rod	Radius rod	Radius rod	.....	.....	Springs	Radius rods	Springs	Rad. rod	Springs	Rad. rod	Rad. rod
Springs, For	½ elliptic	Platform	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	¼ elliptic	Platform	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	132	142	163	144	144	166	168	166	156, 186	167½	Optional	150, 175
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x5, 36x4d	36x5, 38x5d	36x5, 40x5d	36x5, 36x5d	36x4, 36x4d	36x4, 36x4	36x5, 40x5d	34x5, 36x5d	36x5, 36x5d	36x5, 40x5d	36x5, 40x5d	36x5, 36x5d
Driver's Seat	Left	Left	Left	Left	.....	Left	Left	.....	Left	Right	Left	Left
Control Levers	.....	Centre	C. & L.	Centre	.....	Centre	Centre	Centre	Centre	Right	Centre	Centre

LOAD CAPACITY, 7000 POUNDS.

Make	Bourne	Brockway	Chase	Continental (C)	Corbitt	Couple Gear	Dayton	Diamond T	Duplex	Federal	Gabriel	Garford
Model	X-M	R	O	C D 3½	A	H C	A	L	E	L	F	77B
Capacity	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
Chassis Price	$3850	$3200	$3300	$3000	$3200	$5100	$3400	$3475	.....	$2800	$3200	$3700
S. A. E. Rating	28.9	32.40	32.40	32.40	32.50	.....	36.15	32.40	29.00	32.40	45.00	29.00
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Pairs	Block	Pairs	Pairs	Pairs	Pairs	Pairs	Block	Pairs	Block	Block
Bore, Stroke	4¼x5½	4½x5½	4¼x6	4½x5½	4½x5½	5.1x5½	4¾x5½	4½x5½	4¼x5½	4½x5½	4½x6	4¼x6
Valve Location	Left	Left	Rigth	Left	Left	Head	Opposite	Left	.....	Left	Left	Left
No. Main Bear.	Five	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Four
Max. R. P. M.	1100	1500	1200	.....	1500	1400	1000	.....	.....	1160	1200	1000
Lubrication	Force F.	Spl., pres.	Cir. spl.	Cir. spl.	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.	Spl. pres.	Cir. spl.	Cir. splash	Pressure
Cool. System	Water pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Gear	Centrifugal	Cell. cast	Water pump	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Cell. cast	Fin. cast.	Fin. cast.	Cell. cast.	Fin.-t. cast	Cellular	Fin. cast.	Sq.-t. sheet	Tubular	Cell. cast.	Cell. sheet	Tubular
Carburetor	Zenith	Schebler	Stromberg	Stromberg	Stromberg	Stromberg	Stromberg	Rayfield	Schebler	Stromberg	Rayfield	Rayfield
Ignition, Make	Eisemann	Bosch	Bosch	Eisemann	Eisemann	Eisemann	Bosch	Bosch	Eisemann	Eisemann	Bosch	Bosch
Type, Control	Fixed	Single, fixed	Single, fixed	Single, fixed	Single, hand	Foot	Dual, hand	Single, hand	.....	Single, fixed	Single, hand	Single, hand
Governor Drive	Engine	Suction	Motor	Motor	Motor	.....	Duplex	Motor	.....	Motor	.....	Motor
Speed, M. P. H.	12	12	14	18	12	8 to 15	Duplex	13	.....	12	15	13
Clutch Type	.....	Dry disc	Dry disc	Dry disc	Wet disc	.....	Wet disc	Dry disc	Dry disc	Dry disc	Cone	Dry disc
Trans. Gearset	.....	Selective	Selective	Selective	Selective	.....	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	.....	Amid., three	Unit M. four	Unit M. three	Amid., three	.....	Unit J. three	Unit M. four	Amid., three	Unit M. three	Amid., four	Amid., four
Driven by	Top worm	Top worm	Top worm	Top worm	Top worm	Bevel	Double chain	Top worm	Internal gear	Top worm	Top worm	Top worm
Ratio Gear Red.	10.33-1	10.33-1	8.75-1	10.80-1	8.67-1	25.00-1	9.40-1	8.75-1	4.00-1	10.33-1	8.50-1	10.33-1
Tor. Taken by	Springs	Springs	Springs	Radius rod	Springs	Radius rod	.....	Springs	Radius rods	Springs	Radius rods	Radius rods
Propelled by	Radius rod	Radius rods	Springs	Radius rod	Springs	Springs	Radius rod	Radius rod	Radius rods	Radius rod	Springs	Radius rods
Springs, For	¼ elliptic	¼ elliptic	¼ elliptic	¼ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	¼ elliptic	¼ elliptic	¼ elliptic	¼ elliptic	½ elliptic	½ elliptic	Platform	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	160	164	175	168 or 204	168	144	136	164, 186	130	146	160	128
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Splash	Solid
Tire Sizes	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x4d, 36x4d	36x5, 36x4d	36x5, 36x5d	36x6, 36x6	36x5, 36x5d	36x6	36x5, 40x5
Driver's Seat	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right	Left	Right
Control Levers	Left	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

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LOAD CAPACITY, 7000 POUNDS.

Make	G M C	G. M. C.	Gramm-Bern.	Hall	Hall	Harrison	Harrison	Harvey	Hurlburt	Indiana	Kelly Spring.	King
Model	70	71	.....	.....	.....	C	F	W. H. A.	3½ Ton	R	K 40	.....
Capacity	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
Chassis Price	$3300	$3500	$3600	$2800	$2800	.....	.....	$3250	$3500	.....	$3650	$2600
S. A. E. Rating	32.40	32.40	32.40	32.40	32.40	32.40	32.40	29.00	32.40	28.90	32.40	32.40
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Pairs	Pairs	Pairs	Pairs	Pairs	Block	Block	Pairs	Pairs	Pairs
Bore, Stroke	4½x5½	4½x5½	4½x5¾	4½x5½	4½x5½	4½x5½	4½x5½	4¼x6	4½x6	4¼x5¾	4½x6½	4½x5½
Valve Location	Left	Left	Left	Left	Left	Right	Right	Right	Right	Left	Opposite	Left
No. Main Bear.	Three	Three	Three	Five	Five	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1100	1210	1100	1150	1150	1025	1000	1000	1200	1200	1150	1000
Lubrication	Spl. pres.	Spl. pres.	Cir. spl.	Centrifugal	Cir. spl.	.....	.....	Pres.	Water pump	Water pump	Pressure	Spl. pres.
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Pressure	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Fin.-t. cast.	Fin.-t. cast.	Fin.-t. cast.	Fin. cast.	Fin. cast.	.....	Sq-t-sheet	Sq.-t. sheet	Fin. tube	Fin.-t. cast.	Cell. sheet	Cell. sheet
Carburetor	Marvel	Marvel	Zenith	Zenith	Zenith	Schebler	Schebler	Stromberg	Fletcher	Stromberg	Rayfield	Schebler
Ignition, Make	Eisemann	Eisemann	Eisemann	Bosch	Bosch	Bosch	Bosch	Eisemann	Eisemann	Bosch	Eisemann	Bosch
Type, Control	Single, hand	Single, hand	Dual, hand	Single, auto.	Single, auto.	Dual, hand	Dual, hand	Single, auto.	Automatic	Single, hand	Single, auto.	Dual, 2 pt.
Governor Drive	Motor	Motor	Motor	Motor	Motor	Motor	Motor	Duplex	Motor	Motor	Motor	Motor
Speed, M. P. H.	12	12	15	15	15	12	12	13	13	14	12⅝	12
Clutch Type	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Cone	Cone	Dry disc	Dry disc	Dry disc	Cone	Dry disc
Trans. Gearset	Selective	Selective	Ind. C.	Progressive	Progressive	Selective	Selective	Selective	Selective	Selective	Selective	Ind. C.
Located, Speeds	Amid., four	Amid., four	Amid., four	Unit M, four	Unit M, four	Unit J, three	Unit J, three	Amid., four	Unit M, three	Amid., three	Unit J, three	Unit J, three
Driven by	Double chain	Top worm	Top worm	Top worm	Double chain	Double chain	Double chain	Top worm	Worm	Top worm	Double chain	Double chain
Ratio Gear Red.	12.61-1	12.00-1	8.75-1	.....	.....	9.43-1	9.60-1	8.75-1	8.67-1	10.33-1	10.5-1	8.62-1
Tor. Taken by	Springs	Springs	Springs	Springs	Radius rod	.....	.....	Springs	Torsion arm	Springs	Springs	Sub-frame
Propelled by	Radius rod	Radius rod	Springs	Springs	Radius rod	Radius rod	Radius rod	Springs	Radius rod	Radius rod	Radius rod	Radius rod
Springs, For.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	163	163	158	144	144	.....	.....	168	146	156	150	120
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x5, 40x5d	36x5, 40x5d	36x5, 40x5d	36x5, 40x5d	36x5, 40x5d	37x5, 37x4½d	37x5, 37x5d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 40x5d	36x5, 36x5d
Driver's Seat	Left	Left	Left	Left	Left	Right	Right	Left	Left	Left	Left	Right
Control Levers	Centre	Centre	Centre	Centre	Centre	Right	Centre	Centre	Centre	Centre	Centre	Right

LOAD CAPACITY, 7000 POUNDS.

Make	KisselKar	Kleiber	Knickerbocker	Krebs	Larrabee	Larrabee	Maccar	Mack	Menominee	Modern	Mogul	Packard
Model	.....	C	16	90	R	S	M	A C	G	B	T	3 E
Capacity	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
Chassis Price	$2850	$3500	$2850	$3250	$2200	$3300	$3250	$3650	$2775	.....	$2550	$3400
S. A. E. Rating	28.90	32.40	32.40	32.40	32.40	32.40	32.40	40.00	32.40	36.15	32.40	32.40
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Block	Pairs	Pairs	Pairs	Block	Block	Pairs	Pairs	Pairs	Pairs	Pairs	Block
Bore, Stroke	4¼x5½	4½x5½	4½x5	4½x5½	4½x5½	4½x5½	4½x5½	5x6	4½x5½	4¾x6¾	4½x5½	4½x5½
Valve Location	Right	Left	Left	Left	Left	Left	Left	Right	Left	Right	Left	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	.....	Four
Max. R. P. M.	1425	1150	1000	1180	1200	1200	1000	1000	750	.....	1300	1000
Lubrication	Cir. spl.	Spl. pres.	Spl. pres.	Cir. spl.	Cir. spl.	Cir. spl.	Spl. pres.	Spl. pres.	Cir splash	Spl. pres.	Spl. pres.	Pressure
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifuga
Radiator Type	Sq.-t. sheet	Cellular	Fin. cast.	Tube cast	Fin. cast	Fin. cast.	Cell. sheet	Tubular	Fin. cast	Fin. cast.	Cell. sheet	Cellular
Carburetor	Stromberg	Schebler	Stromberg	Zenith	Schebler	Schebler	Stromberg	Optional	Stromberg	Zenith	Carter	Packard
Ignition, Make	Eisemann	Bosch	Bosch	Bosch	Bosch	Bosch	Bosch	Bosch	Bosch	Eisemann	Bosch	Dixie
Type, Control	Single, hand	Hand	Single, hand	Hand	Single, hand	Single, hand	Single, hand	Dual, hand	Single, hand	Single, fixed	Single, fixed	Hand
Governor Drive	Motor	Motor	Motor	Motor	Motor	Motor	Motor	Motor	Drive shaft	.....	Motor	Motor
Speed, M. P. H.	13	13	12	12	12	12	11	15.79	12	.....	15	13
Clutch Type	Dry disc	Wet disc	Dry disc	Disc	Dry disc	Dry disc	Dry disc	Dry plate	Dry disc	Cone	.....	Dry disc
Trans. Gearset	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Located, Speeds	Amid., four	Amid., three	Unit M, three	Amid., 4	Unit M, 3	Unit M, three	Unit M, three	Amid., three	Amid., three	Amid., four	Amid., three	Amid., four
Driven by	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm	Top worm	Double chain	Worm	Top worm	Double chain	Top worm
Ratio Gear Red.	11.75-1	8.67-1	10.33-1	10.33-1	11.70-1	11.70-1	10.33-1	7.54-1	10.32-1	8.75-1	7.75-1	9.00-1
Tor. Taken by	Springs	Springs	Springs	Springs	Springs	Springs	Springs	.....	Springs	Springs	.....	Torsion arm
Propelled by	Springs	Springs	Radius rod	Radius rod	Springs	Springs	Radius rod	Radius rod	Radius rods	Radius rod	Radius rod	Radius rod
Springs, For.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	168	160	164	160, 180	154	166	174	156, 168, 180	160	176	165	156, 186
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 40x5d	36x5, 36x5d	38x5, 38x5d	36x5, 36x5d	36x5, 36x5d
Driver's Seat	Left	Right	Left	Right	Left	Left	Left	Left	Left	Right	Left	Left
Control Levers	Centre	Centre	Centre	Right	Centre	Centre	Centre	Centre	Centre	.....	Centre	Left

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

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LOAD CAPACITY, 7000 POUNDS.

Make	Royal	Selden	Service	Service	Signal	Standard	Stegeman	Sterling	Tiffin	United	U. S.	U. S.
Model	A 3½	N L	175	170	M	65	.....	.....	P W	C S W	D	J
Capacity	7000	7000	7000	7000	7000	7000	8000	7000	7000	7000	7000	7000
Chassis Price		$3150	$3250	$3000	$3000	$3000	$3400	$3400	$2900	$2900	$3200	$3500
S. A. E. Rating	28.90	32.40	32.40	28.90	32.40	32.40	33.75	29.00	27.20	32.40	32.4	32.40
Engine Cyls	Four	Four	Four	Four	Four	Four	Six	Four	Four	Four	Four	Four
How Cast	Block	Pairs	Block	Block	Pairs	Pairs	Three's	Pairs	Block	Pairs	Pairs	Pairs
Bore, Stroke	4¼x6	4½x5½	4½x6	4¼x5½	4½x5½	4½x5½	3¾x5¼	4¼x5¾	4½x5¼	4½x5½	4½x5½	4½x5½
Valve Location	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Left	Left
No. Main Bear	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1600	1250	1800	1800	1800	1050	1100	1040	1000	1700	1190	1190
Lubrication	Pressure	Cir. spl.	Pressure	Spl. pres.	Spl. pres.	Spl. pres.	Spl. pres.	Cir. spl.	Spl., pres.	Spl. pres.	Cir. spl.	Cir. spl.
Cool. System	Water pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Water pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Cellular	Sq.-t. sheet	Fin. cast	Fin.-t. cast.	Fin. cast.	Fin.-t. cast.	Sq.-t. cast	Fin. cast	Finned tube	Cell. sheet	Cellular	Cellular
Carburetor	Stromberg	Stromberg	Stromberg	Stromberg	Stromberg	Schebler	Rayfield	Holley	Schebler	Stromberg	Stromberg	Stromberg
Ignition, Make	Bosch	Eisemann	Eisemann	Eisemann	Eisemann	Eisemann	Westinghouse	Eisemann	Bosch	Eisemann	Bosch	Bosch
Type, Control	Single, fixed	Single, fixed	Dual, hand	Single, hand	Single, fixed	Single auto	Single, auto.	Single, auto.	Dual, hand	Single, fixed	Dual, hand	Dual, hand
Governor Drive	Motor	Motor	.....	.....	Motor	Motor	Motor	Motor	Motor	Motor	Motor	Motor
Speed, M. P. H.	15	13	14	12	15	12	13	13	11	12	15	13
Clutch Type	Dry disc	Dry disc	Dry plate	Dry plate	Dry disc	Dry disc	Dry disc	Dry disc	Cone	Dry disc	Cone	Cone
Trans. Gearset	Ind. C.	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Selective	Ind. C.	Ind. C.
Located, Speeds	Amid., three	Unit M, 4	Amid., four	Amid., four	Unit M, three	Amid., three	Unit M, three	Unit M, three	Amid., three	Unit M, three	Amid., 3	Amid., three
Driven by	Top worm	Top worm	Worm	Top worm	Top worm	Top worm	Top worm	Top worm	Worm	Top worm	Double chain	Top worm
Ratio Gear Red.	.....	10.33-1	7.80-1	8.75-1	10.33-1	10.33-1	11.33-1	8.75-1	11.70-1	8.75-1	8.01-1	11.75-1
Tor. Taken by	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	Springs	.....	Springs
Propelled by	Springs	Radius rods	Radius rods	Radius rod	Radius rod	Radius rod	Rad. rod	Springs	Radius rods	Springs	Radius rod	Springs
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	158	164	171	171	168	158, 170	160	158	156	144 or 168	156	156
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x5, 38x5d	36x5, 36x5d	36x5, 36x5d	36x5, 36x5d	36x5, 40x5d	36x5, 36x5d	36x5, 40x5d	36x4, 36x5d	36x5, 36x5d	36x5, 36x5d	34x5, 36x5d	36x5, 40x5d
Driver's Seat	Right	Right	Left	Left	Left	Left	Left	Left	Left	Left	Left	Left
Control Levers	Right	Centre	Centre	Centre	Centre	Centre	C. & L.	Centre	Centre	Centre	Centre	Centre

LOAD CAPACITY, 7000 POUNDS.

Make	Velie	Wichita	Wilcox	Z & L
Model	26	O	P	.....
Capacity	7000	7000	7000	7000
Chassis Price	$3350	$3250	.....	$3250
S. A. E. Rating	32.40	28.90	29.00	36.15
Engine Cyls	Four	Four	Four	Four
How Cast	Pairs	Pairs	Pairs	Pairs
Bore, Stroke	4½x5½	4¼x5¾	4¼x5	4¾x5½
Valve Location	Left	Left	Right	Opposite
No. Main Bear	Three	Three	Three	Three
Max. R. P. M.	1100	1200	1200	1200
Lubrication	Spl. pres.	Cir. spl.	Cir. spl.	Spl., pres.
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Fin. cast.	Cell. sheet	Cell. cast	Cell. cast
Carburetor	Stromberg	Stromberg	Optional	Stromberg
Ignition, Make	Bosch	Bosch	Bosch	Bosch
Type, Control	Single, hand	Single, hand	Single, hand	Dual, hand
Governor Drive	Motor	Motor	Motor	Duplex
Speed, M. P. H.	14	11	10	12
Clutch Type	Dry disc	Cone	Cone	Dry plate
Trans. Gearset	Selective	Selective	Selective	Ind. clutch
Located, Speeds	Amid., four	Amid., three	Amid., 3	Amid., three
Driven by	Top worm	Top worm	Top worm	Worm
Ratio Gear Red.	10.30-1	11.75-1	11.7-1	11.75-1
Tor. Taken by	Torsion arm	Springs	Springs	Springs
Propelled by	Radius rod	Springs	Springs	Springs
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	172	165	154	170
Tire Type	Solid	Solid	Solid	Solid
Tire Sizes	36x5, 40x5d	36x5, 36x5d	36x5, 36x5d	36x5, 40x5d
Driver's Seat	Right	Right	Left	Left
Control Levers	Right	Centre	Centre	Right

LOAD CAPACITY, 8000 POUNDS.

Blair	Burford	Continental (C)	Continental (S)	Kelly Spring.	Moreland	Old Reliable	Old Reliable
2 E	D 3	C P 4	W 30	K 45	.....	.....	.....
8000	8000	8000	8000	8000	8000	8000	8000
$3750	$3600	$3350	$2750	$2800	$3600	$3750	$3750
32.40	32.40	32.4	32.40	32.40	36.15	36.15	36.15
Four	Four	Four	Four	Four	Four	Four	Four
Pairs	Block	Pairs	Block	Pairs	Pairs	Pairs	Pairs
4½x6¾	4½x6¾	4½x5½	4½x5½	4½x6½	4¾x6¾	4¾x5½	4¾x5½
Left	Left	Left	.....	Opposite	Left	Opposite	Opposite
Three	Three	Three	Three	Three	Three	Three	Three
1000	1100	.....	1200	1150	1000	.....	.....
Cir. spl.	Spl. pres.	Cir. spl.	Spl. pres.	Pressure	Cir. spl.	Spl. pres.	.....
Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Z-Z-t cast	Fin. cast.	Cell. cast	Fin. cast	Cell. sheet	Cell. cast.	Fin. sheet	Sq.-t. sheet
Optional	Zenith	Stromberg	Stromberg	Rayfield	Optional	Stromberg	Stromberg
Optional	Eisemann	Eisemann	Eisemann	Eisemann	Optional	Bosch	Bosch
Optional	Single, fixed	Single, fixed	Single, hand	Single, auto.	Single, hand	Single, hand	Single, hand
Motor	Motor	Motor	Motor	Motor	Motor	.....	Duplex
10	13	18	Nine	12.8	12	14	.....
Cone	Cone	Dry disc	Disc	Cone	Dry disc	Wet disc	Dry disc
Ind. C.	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Amid., three	Amid., four	Amid.	Unit M, 3	Unit J, three	Amid., four	Unit J, three	Amid., four
Top worm	Top worm	Top worm	Top worm	Double chain	Top worm	Double chain	Worm
9.33-1	8.75-1	10.33-1	.....	10.7	7.80-1	8.14-1	8.75-1
Sub.-F. rad. rod	Springs	Radius rods	.....	Springs	Springs	.....	Springs
Sub.-F. rad. rod	Rad. rod	Radius rods	.....	Radius rod	Radius rod	Radius rod	Springs
½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....
½ elliptic	½ elliptic	½ elliptic	¼ elliptic	½ elliptic	½ elliptic	½ elliptic	.....
135, 144	175	168 or 204	Optional	150	186	126	.....
Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
36x5, 36x5d	36x5, 36x5d	36x5, 40x5d	36x6, 36x6d	36x5, 40x5d	36x5, 38x5d	36x5, 36x5d	36x5, 40x5d
Right	Right	Left	Optional	Left	Right	Right	Right
Centre	Right	Centre	Centre	Centre	Centre	Right	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

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LOAD CAPACITY, 8000 AND 9000 POUNDS.

Make	Peerless	Riker	Steel	United	Winther	Packard
Model	T C 4	B B	B A	4-Ton	87	4 E
Capacity	8000	8000	8000	8000	8000	9000
Chassis Price	$4000	$3750	$3500	$3200	$3600	$3800
S. A. E. Rating	32.40	29.00	40.00	36.10	27.20	32.40
Engine Cyls	Four	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Pairs	Pairs	Block	Block
Bore, Stroke	4½x6½	4¼x6	5x5	4¾x5½	4¼x6	4½x5½
Valve Location	Opposite	Opposite	Left	T head	Left	Right
No. Main Bear	Three	Five	Three	Three	Four	Four
Max. R. P. M.	925	1350	950	1700	1750	1000
Lubrication	Splash	Spl. pres.	.....	Pressure	Pres.	Pressure
Cool. System	Gear	Centrifugal	Centrifugal	Water pump	Water pump	Centrifugal
Radiator Type	Fin. sheet	Fin. cast	Cell. sheet	Cell. cast	Cell. cast	Cellular
Carburetor	Stromberg	Riker	Stromberg	Stromberg	Master	Packard
Ignition, Make	Remy	Bosch	At. Kt.	Eisemann	Eisemann	Dixie
Type, Control	Dual, hand	Duplex	Single, auto	Single, fixed	.....	Hand
Governor Drive	Motor	Motor	Motor	Engine	.....	Motor
Speed, M. P. H.	12.5	14½	11	12	12	12
Clutch Type	Cone	Cone	Wet disc	Dry disc	Dry disc	Dry disc
Trans. Gearset	Selective	Selective	Ind. clutch	Selective	Selective	Selective
Located, Speeds	Unit J, four	Amid., four	Unit J, three	Unit M, three	Three	Amid., four
Driven by	Double chain	Top worm	Double chain	Top worm	Internal gear	Top worm
Ratio Gear Red.	8.70-1	10.00-1	9.21-1	8.75-1	.....	10.00-1
Tor. Taken by	Springs	Torsion arm	.....	Springs	.....	Torsion arm
Propelled by	Radius rod	Radius rod	Radius rod	Springs	.....	Radius rod
Springs, For	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic
Wheelbase	151	150, 170, 190	127	144	156	156 or 186
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x5, 40x5d	36x5, 36x6d	38x6, 40x5d	36x5, 36x5d	36x5, 40x5d	36x5, 40x5d
Driver's Seat	Right	Right	Right	Right	.....	Left
Control Levers	Right	Right	Right	Centre	.....	Left

LOAD CAPACITY, 10,000 POUNDS.

Make	A & B	Atterbury	Available	Avery	Blair	Continental
Model	5 J	7 E	5	B	2 F	C S 5
Capacity	10,000	10,000	10,000	10,000	10,000	10,000
Chassis Price	.....	$4375	$4400	$4500	$4250	$4000
S. A. E. Rating	42.64	32.40	32.40	44.20	32.40	40.8
Engine Cyls	Four	Four	Four	Four	Four	Six
How Cast	Pairs	Pairs	Pairs	Pairs	Pairs	Pairs
Bore, Stroke	5.17x4¾	4½x5½	4½x5½	5¼x5¾	4½x6¾	4½x5¼
Valve Location	Right	Left	Right	Opposite	Left	Left
No. Main Bear	Three	Three	Three	.....	Three	Five
Max. R. P. M.	.....	1125	1175	1000	1000	.....
Lubrication	Cir. spl.	Cir. spl.	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.
Cool. System	Gear	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Fin. sheet	Fin. cast.	Cellular	Cell. sheet	Z-Z-t. cast	Cell. cast
Carburetor	Schebler	Zenith	Stromberg	Schebler	Optional	Stromberg
Ignition, Make	Bosch	High tension	Bosch	Eisemann	Optional	Eisemann
Type, Control	Dual, hand	Double hand	Single, fixed	Dual, auto.	Optional	Single, hand
Governor Drive	.....	Motor	Motor	Motor	Motor	Motor
Speed, M. P. H.	.....	10	12	10	10	15
Clutch Type	.....	Dry disc	Dry disc	Wet disc	Cone	Dry disc
Trans. Gearset	.....	Selective	Selective	Selective	Ind. C.	Selective
Located, Speeds	Amid., inf.	Unit M, four	Unit M, three	Unit J, three	Amid., three	Amid.
Driven by	Int.-g. f.	Top worm	Worm	Double chain	Top worm	Double chain
Ratio Gear Red.	28.00-1	12.60-1	11.75-1	12.50-1	9.33-1	12.00-1
Tor. Taken by	Radius rod	Springs	Springs	.....	Sub.-F, rad. rod	Radius rods
Propelled by	Radius rod	Springs	Radius rod	Rad. rod	Sub.-F, rad. rod	Radius rods
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	144	167½	158, optional	128	135, 144	120, 168, 192
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	48x3½d, 48x5d	36x5, 40x5d	36x6, 40x6d	38x6, 38x5d	36x6, 36x6d	36x5, 40x6d
Driver's Seat	Right	Right	Left	Right	Right	Left
Control Levers	Right	Right	Centre	Centre	Right	Centre

LOAD CAPACITY, 10,000 POUNDS.

Make	Couple Gear	Dayton	Diamond T	Federal	Garford	G. M. C.	G. M. C.	Hall	Harvey	Horner	Hurlburt	Indiana
Model	A C	B	R	W	68	100	101	.....	W. K. A.	F	5 Ton	L
Capacity	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Chassis Price	$5500	$4500	$4300	.....	$4500	$3850	$4100	$3400	$4000	$4350	$4250	.....
S. A. E. Rating	.....	44.20	32.40	29.00	36.15	32.40	32.40	32.40	32.40	44.20	33.75	42.00
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Pairs	Block	Pairs	Pairs	Pairs	Pairs	Block	Pairs	Block	Pairs
Bore, Stroke	5¼x7	5¼x7	4½x5½	4¼x5½	4¾x5½	4½x5½	4½x5½	4½x5½	4½x6	5¼x5¾	3¾x5½	5.1x5½
Valve Location	Head	Opposite	Left	Right	Opposite	Left	Left	Left	Right	Opposite	Right	Opposite
No. Main Bear	Three	Three	Three	1000	Three	Three	Three	Five	Three	Three	Four	Three
Max. R. P. M.	1200	1000	.....	.....	1000	1160	1150	1150	1000	1000	1200	1800
Lubrication	Spl. pres.	Cir. spl.	Cir. spl.	Centrifugal	Pressure	Spl. pres.	Spl. pres.	Cir. spl.	Pres.	Spl. pres.	Spl., pres.	Pres.
Cool. System	.....	Centrifugal	Centrifugal	Fin. sheet	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Water pump	Centrifugal
Radiator Type	Cellular	Fin. cast.	Cell. cast.	Zenith	Tubular	Fin.-t. cast.	Fin.-t. cast.	Fin. cast.	Sq.-t. sheet	Fin. cast.	Fin. tube	Fin.-t. cast.
Carburetor	Stromberg	Stromberg	Rayfield	Eisemann	Rayfield	Marvel	Marvel	Zenith	Stromberg	Master	Fletcher	Stromberg
Ignition, Make	Eisemann	Bosch	Bosch	Single, fixed	Bosch	Eisemann	Eisemann	Bosch	Eisemann	Bosch	Eisemann	Bosch
Type, Control	Foot	Dual, hand	Single, hand	Motor	Single, hand	Single, hand	Single, hand	Single, auto.	Single, auto	Duplex, hand	Dual, auto	Single, hand
Governor Drive	.....	Duplex	Motor	10	Motor	Motor	Motor	Motor	Duplex	Motor	Motor	Motor
Speed, M. P. H.	7 to 12	10	10	Dry plate	Nine	10	10	12	11	10	12	11
Clutch Type	.....	Wet disc	Dry disc	Selective	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc	Dry disc
Trans. Gearset	.....	Selective	Selective	Amid., four	Selective	Selective	Selective	Progressive	Selective	Selective	Selective	Selective
Located, Speeds	.....	Unit J, four	Amid., four	Worm	Unit J, four	Amid., four	Amid., four	Unit M, four	Amid., four	Amid., three	Amid., three	Amid., three
Driven by	Bevel	Double chain	Top worm	11.60-1	Double chain	Double chain	Top worm	Double chain	Top worm	Top worm	Worm	Top worm
Ratio Gear Red.	25.00-1	12.00-1	13.67-1	Springs	11.53-1	13.84-1	13.66-1	.....	11.75-1	13.40-1	10.33-1	11.75-1
Tor. Taken by	Radius rod	.....	Springs	Radius rod	Radius rod	Springs	Springs	.....	Springs	Springs	Torsion arm	Springs
Propelled by	Springs	Rad. rod	Springs	.....	Radius rod	Radius rod	Radius rod	Radius rod	Springs	Radius rod	Radius rod	Radius rod
Springs, For	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	Platform	½ elliptic	156	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	Platform	½ elliptic	½ elliptic
Wheelbase	144	148	170	Solid	128	163	163	134	168	156	156	163
Tire Type	Solid	Solid	Solid	36x6, 40x6d	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	37x5d	36x6, 42x5d	36x6, 40x6d	Left	36x6, 40x6d	36x6, 40x6d	36x6, 40x6d	36x5, 40x6d	36x6, 40x6d	36x6, 40x6d	36x5, 40x6d	36x5, 40x6d
Driver's Seat	Right	Left	Right	Centre	Right	Left	Left	Left	Left	Left	Left	Left
Control Levers	Left	Centre	Centre	Centre	Right	Centre	Centre	Centre	Centre	Centre	Centre	Centre

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LOAD CAPACITY, 10,000 POUNDS.

Make	Kelly Spring.	Kleiber	Knickerbocker	Krebs	Lombard	Moore	Moreland	Nel. & Le Moon	Old Reliable	Peerless	Pierce Arrow	Rowe
Model	K 50	D	16	98	.....	.....	16J	E 5	.....	T C 5	.....	T W
Capacity	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Chassis Price	$4400	$4500	$4000	$4000	.....	$4500	$4250	$4200	$4250	$4500	$4500	$4500
S. A. E. Rating	32.40	44.10	32.40	32.40	86.40	44.20	36.15	32.40	36.15	32.40	38.25	36.15
Engine Cyls	Four	Four	Four	Four-L	Six	Four	Four	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Pairs	Pairs	Pairs	Pairs	Pairs	Block	Pairs	Pairs	Pairs	Pairs
Bore, Stroke	4½x6½	5¼x5¾	4½x5½	4½x5½	6x6	5¼x7	4¾x6¾	4½x6	4¾x5½	4½x6½	4⅞x6	4¾x5½
Valve Location	Opposite	Opposite	Left	Left	.....	Opposite	Left	Right	Opposite	Opposite	Opposite	Opposite
No. Main Bear.	Three	Three	Three	Three	.....	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1150	1100	1000	1170	1600	1000	1000	1000	.....	925	950	.....
Lubrication	Pressure	Spl. pres.	Spl. pres.	Cir. spl.	Pressure	Cir. spl.	Cir. splash	Cir. spl.	Spl. pres.	Spl.	Pressure	Pressure
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Gear	Centrifugal	Centrifugal
Radiator Type	Cell. sheet	Z-Z-t. sheet	Cellular	Tube cast	Fin. sheet	Fin. sheet	Cell. sheet	Sq.-t. sh.	Fin. sheet	Fin. sheet	Fin. cast.	Sq.-t. sheet
Carburetor	Rayfield	Schebler	Stromberg	Zenith	Stewart	Master	Ensign	Stromberg	Stromberg	Stromberg	Pierce Arrow	.....
Ignition, Make	Eisemann	Bosch	Bosch	Bosch	.....	Splitdorf	Dixie	Bosch	Bosch	Remy	Optional	Bosch
Type, Control	Single, auto.	Hand	Single, hand	Hand	Dual, hand	Dual, hand	Single, hand	Dual	Single, hand	Dual, hand	Dual hand	Single, hand
Governor Drive	Motor	Motor	Motor	Motor	Motor	Motor	Motor	Motor	.....	Motor	Motor	Motor
Speed, M. P. H.	11.2	12	12	10	Six	12	Nine	10	12	11	14	.....
Clutch Type	Cone	Wet disc	Cone	Disc	Wet disc	Cone	Dry disc	Dry disc	Wet disc	Cone	Cone	Wet disc
Trans. Gearset Located, Speeds	Selective	Selective	Selective	Selective	.....	Selective	Selective	Selective	Selective	Selective	Selective	Selective
Driven by	Unit J, three	Amid., four	Amid., 3	Amid., four	....., three	Unit J, four	Amid., four	Unit M, three	Unit J, three	Unit J, four	Amid., three	Amid
Ratio Gear Red.	Double chain	Top worm	Chain	Top worm	Top worm	Double chain	Worm	Top worm	Double chain	Double chain	Top worm	Top worm
Tor. Taken by	12.00-1	8.67-1	.....	13.67-1	.....	9.05-1	11.67-1	11.67-1	8.82-1	10.50-1	7.80-1	.....
Propelled by	Springs	Springs	Radius rod	Springs	.....	.....	Springs	Springs	.....	Springs	Torsion arm	Springs
Springs, For	Radius rod	Springs	Radius rod	Radius rod	.....	Radius rod	Radius rods	.....	Radius rod	Radius rod	Radius rod	Radius rod
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Tire Type	150	170	148	180, 160	.....	175	180	Optional	126	151	168	156
Tire Sizes	Solid	Solid	Solid	Solid	.....	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Driver's Seat	36x6, 40x6d	36x6, 40x6d	36x6, 36x6d	36x6, 40x6d	.....	36x3, 42x6d	36x6, 40x6d	36x6, 40x6d	36x3, 36x6d	38x6, 42x6d	36x5, 40x6d	36x6, 40x6d
Control Levers	Right	Right	Left	Right	.....	Right	Right	Right	Right	Right	Right	Left
	Centre	Centre	Left	Right	.....	Right	Centre	Centre	Right	Right	Right	Centre

LOAD CAPACITY, 10,000 POUNDS.

Make	Royal	Saurer	Schleicher	Service	Signal	Standard	Steel	Stegeman	Sterling	Tiffin	United	U. S.
Model	A 5	.....	.....	200	R	85	A	.....	.....	R W	E S W	K
Capacity	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Chassis Price	.....	$4800	$4500	$4000	$4000	$3700	$4000	$4100	$4500	$4250	$3900	$4400
S. A. E. Rating	36.10	30.00	40.00	32.40	32.40	32.40	40.00	60	32.40	33.75	41.61	36.10
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Six	Four	Six	Four	Four
How Cast	Pairs	Pairs	Pairs	Block	Pairs	Pairs	Pairs	Triple units	Pairs	Threes	Pairs	Pairs
Bore, Stroke	4¾x5	4.33x5½	5x6	4½x6	4½x5½	4½x5½	5x5	4x5½	4¾x6¾	3¾x5¼	4¾x5½	4¾x6¾
Valve Location	Opposite	Opposite	Right	Right	Left	Left	Head	Left	Right	Right	Opposite	Left
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	900	1150	1200	1800	1300	1050	950	1100	950	1000	1700	950
Lubrication	Pressure	Spl. pres.	.....	Pres.	Spl. pres.	Spl. pres.	.....	Spl. pres.	Cir. spl.	Spl. pres.	Spl. pres.	Cir. spl.
Cool. System	Water pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Water pump	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Cellular	Cell. sheet.	Sq.-t. sheet	Fin.-t. cast.	Fin. cast.	Fin.-t. cast.	Cell. sheet	Cast	Fin. cast.	Fin. sheet	Fin. cast	Cell. sheet
Carburetor	Stromberg	Saurer	Stromberg	Stromberg	Stromberg	Schebler	Stromberg	Rayfield	Holley	Schebler	Stromberg	Stromberg
Ignition, Make	Bosch	Bosch	Bosch	Eisemann	Eisemann	Eisemann	At. Kt.	Westinghouse	Eisemann	Bosch	Eisemann	Bosch
Type, Control	Single, fixed	Single, hand	Dual, hand	Dual, hand	Single, fixed	Auto	Single, auto	Single, auto	Dual, auto	Single, hand	Single, fixed	Dual, hand
Governor Drive	Motor	Motor	.....	.....	Motor	Motor	Motor	Motor	Motor	Motor	D. shaft	Motor
Speed, M. P. H.	12	.....	20	12	15	10	Nine	12	12½	10	10	10
Clutch Type	Wet disc	Cone	Cone	Dry plate	Dry disc	Dry disc	Wet disc	Dry disc	Dry disc	Dry plate	Dry disc	Cone
Trans. Gearset Located, Speeds	Ind. C.	Selective	Selective	Selective	Selective	Selective	Ind. clutch	Selective	Selective	Selective	Selective	Ind. C.
Driven by	Amid., three	Unit J, four	Amid., four	Amid., four	Amid., three	Amid., three	Unit J, three	Unit M, 3	Unit M, four	Amid., four	Amid., four	Amid., three
Ratio Gear Red.	Top worm	Double chain	Double chain	Worm	Worm	Top worm	Double chain	Top worm	Top worm	Top worm	Top worm	Top worm
Tor. Taken by	Springs	Optional	5.00-1	11.67-1	13.00-1	13.67-1	9.58-1	12.67-1	8.75-1	12 20-1	11.75-1	11.75-1
Propelled by	Springs	Radius rod	.....	Springs	Springs	Springs	.....	Springs	Springs	Springs	Springs	Springs
Springs, For	½ elliptic	Radius rod	Radius rod	Radius rod	Radius rod	Radius rods	Radius rod	Rad. rod	Springs	Radius rod	Radius rod	Radius rod
Springs, Rear	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	168	153½	.....	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Tire Type	Solid	Solid	150	171	180	158, 170	127	168	168	168	144 and 168	168
Tire Sizes	36x6, 40x6d	36x5, 42x5d	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Driver's Seat	Right	Right	34x5, 34x4d	36x6, 40x6d	36x6, 40x6d	36x6, 40x6d	38x7, 40x6d	36x5, 40x6d	36x5, 40x6d	36x5, 40x5d	36x6, 40x6d	36x5, 40x6d
Control Levers	Right	Right	Right	Left	Left	Left	Right	Left	Left	Left	Right	Right
			Right	Centre	Centre	Centre	Right	C. & L.	Centre	Centre	Right	Centre

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 10,000 TO 12,000 POUNDS.

Make	Viall	Voltz	Walter	Watson	White	Wichita	Z & L	Maccar	Mack	Packard	Doane	Garford
Model		T	.....	.....	T C D	Q	.....	U	A C	5 E	1916	69
Capacity	10,000	10,000	10,000	10,000	10,000	10,000	10,000	11,000	11,000	11,000	12,000	12,000
Chassis Price	$3500	$3600	$4750	.....	$4500	$3850	$4150	$4150	$4250	$4300	*$4500	$4700
S. A. E. Rating	32	40.00	30.65	32.40	29.00	28.90	41.62	32.40	40.00	40.00	36.15	41.50
Engine Cyls	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast		Pairs	Block	Pairs	Block	Pairs	Pairs	Pairs	Pairs	Block	Pairs	Pairs
Bore, Stroke	4½x5½	5x5¾	4⅜x6	4½x5½	4¼x6⅜	4½x5¾	5 1/10x5½	4½x5½	5x6	5x5½	4¾x6¾	5 1/10x5½
Valve Location		Opposite	Right	Left	Right	Left	Opposite	Left	Right	Right	Left	Opposite
No. Main Bear		Three	Three	Three	Three	Three	Three	Three	Three	Four	Three	Three
Max. R. P. M		1000	.....	1100	.....	1200	1200	1000	1000	1000	1000	1000
Lubrication		Cir. spl.	Cir. spl.	Spl. pres.	Spl. pres.	Pump splash	Spl., pres.	Spl. pres.	Spl. pres.	Pressure	Cir. spl.	Pressure
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type		Cell. sheet	Fin. sheet	Cellular	Cell. sheet	Cellular	Cell. cast	Cell. sheet	Tubular	Cellular	Fin. cast.	Tubular
Carburetor	Rayfield	Rayfield	Zenith	Zenith	White	Stromberg	Stromberg	Stromberg	Optional	Packard	Schebler	Rayfield
Ignition, Make	Bosch	Eisemann	Eisemann	Bosch	Bosch	Bosch	Bosch	Bosch	Bosch	Dixie	Bosch	Bosch
Type, Control		Dual, auto	Single, auto.	Hand	Single, hand	Single, hand	Dual, hand	Single	Dual, hand	Hand	Dual, hand	Single, hand
Governor Drive		Motor	Motor	Motor	.....	Motor	Duplex	Motor	Motor	Motor	Motor	Motor
Speed, M. P. H		13	14	11½	.....	10	10	10	14.17	11	10	Eight
Clutch Type	Disc	Wet disc	Cone	Wet disc	Wet plate	Cone	Dry plate	Dry disc	Dry plate	Dry plate	Dry disc	Dry disc
Trans. Gearset	elective	Selective	Selective	Selective	Selective	Selective	Ind. clutch	Selective	Selective	Selective	Selective	Selective
Located, Speeds	....., three	Unit J, three	Unit M, four	Unit M, four	Amid., four	Amid., three	Amid., three	Amid., four	Amid., three	Amid., four	Unit M, three	Unit J, four
Driven by		Double chain	Spur-g., four	Top worm	Double chain	Top worm	Worm	Top worm	Double chain	Top worm	Double chain	Double chain
Ratio Gear Red		7.59-1	.....	10.33-1	.....	13.00-1	11.75-1	13.67-1	8.40-1	10.66-1	10.50-1	13.81-1
Tor. Taken by		Radius rod	Springs	Springs	.....	Springs	Springs	Springs	Radius rod	Torque arm	.....	Radius rod
Propelled by		Radius rod	Springs	Radius rod	Radius rod	Springs	Springs	Radius rod	Radius rod	Radius rods	Radius rod	Radius rod
Springs, For		Platform	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear		Platform	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	144	142	144	80	169	165	180	186	156, 168, 180	156, 186	178	128
Tire Type		Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x5, 36x5d	36x6, 40x6d	40x6, 40x5d	34x4, 36x5d	36x5, 40x6d	38x6, 38x6d	36x6, 40x6d	36x5, 40x6d	36x6, 40x6d	36x6, 40x6d	36x6, 38x6d	36x6, 40x7d
Driver's Seat	Right	Left	Left	Right	Left	Right	Left	Left	Left	Left	Right	Right
Control Levers	Right	Centre	Centre	Centre	C. & L.	Right	Centre	Centre	Centre	Centre	Centre	Right

LOAD CAPACITY, 12,000 AND 13,000 POUNDS.

Make	Gramm-Bern.	G. V. Mercedes	Kelly Spring.	Old Reliable	Peerless	Royal	Tiffin	Walter	Winther	Packard	Saurer	Bully Tractor
Model	5-6 Ton	F. V.	K 60	.....	T C 6	A 6	S W	.....	127	6 E	.....	.....
Capacity	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	13,000	13,000	.....
Chassis Price	$4500	$4500	$4600	$4500	$5000	.....	$4550	$5000	$4500	$4550	$5800	$3400
S. A. E. Rating	36.00	29.00	32.40	36.15	32.40	42.02	33.75	30.65	42.20	40.00	30.00	32.40
Engine Cyls	Four	Four	Four	Four	Four	Four	Six	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Pairs	Pairs	Pairs	Pairs	Threes	Block	Pairs	Block	Pairs	Pairs
Bore, Stroke	4¾x6¾	4¼x5 9/10	4½x6½	4¾x6¾	4½x6½	5 1/10x5½	3¾x5¼	4⅜x6	5⅛x6	5x5½	4.33x5½	4½x5
Valve Location	Left	Head	Opposite	Left	Opposite	Opposite	Right	Right	T head	Right	Opposite	Opposite
No. Main Bear	Three	Four	Three	Three	Three	Three	Three	Three	Four	Four	Three	Five
Max. R. P. M	1100	850	1150	750	925	900	1000	.....	.....	1000	1000	.....
Lubrication	Cir. spl.	Spl. pres.	Pressure	Cir. spl.	Spl.	Pressure	Spl. pres.	Cir. spl.	Pres.	Pres.	Spl. pres.	Cir. spl.
Cool. System	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Gear	Water pump	Centrifugal	Centrifugal	Water pump	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Fin.-t. cast.	Cell. sheet	Cell. sheet	Fin. sheet	Fin. sheet	Cellular	Fin. sheet	Fin. sheet	Cell. cast	Cellular	Cell. sheet	Cell. sheet
Carburetor	Zenith	G. V.	Rayfield	Stromberg	Stromberg	Stromberg	Schebler	Zenith	Master	Packard	Saurer	.....
Ignition, Make	Eisemann	Bosch	Eisemann	Bosch	Remy	Bosch	Bosch	Eisemann	Eisemann	Dixie	Bosch	.....
Type, Control	Dual, hand	Single, fixed	Single, auto.	Single, hand	Dual, hand	Single, fixed	Single, hand	Single, auto	.....	Hand	Single, hand	....., hand
Governor Drive	Motor	Motor	Motor	Motor	Motor	Motor	Motor	Motor	.....	Engine	Motor	Motor
Speed, M. P. H.	15	11	11	10	11	10	10	12	10	11	Optional	12
Clutch Type	Cone	R. cone	Cone	Wet disc	Cone	Wet disc	Dry plate	Cone	Dry disc	Dry plate	Cone	Cone
Trans. Gearset	Ind. C.	Selective	Selective	Selective	Selective	Ind. C.	Selective	Selective	Selective	Selective	Selective	Ind. C.
Located, Speeds	Amid., four	Amid. four	Unit J, three	Unit J, three	Unit J, four	Amid., three	Amid., four	Unit M, four	Three	Amid., four	Unit J, four	Unit M, three
Driven by	Top worm	Int. gear	Double chain	Double chain	Double chain	Optional	Top worm	Spur-g., four	Internal gear	Top worm	Double chain	Double chain
Ratio Gear Red.	8.75-1	9.36-1	12.40-1	8.93-1	10.50-1	.....	12.20-1	.....	.....	10.66-1	Optional	.....
Tor. Taken by	Springs	Torsion arm	Springs	.....	Springs	Springs	Springs	Springs	.....	Torque arm	Radius rod	.....
Propelled by	Springs	Radius rod	Radius rod	Radius rod	Radius rod	.....	Radius rod	Springs	.....	Radius rods	Radius rod	Radius rod
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	168	169	150	126	151	168	168	144	156	156, 186	156½	71
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x6, 40x7d	34x5, 40x6	36x6, 40x7d	36x6, 40x7d	38x7, 42x7d	36x6, 40x6 d	36x6, 40x6d	40x6, 40x6d	36x6, 40x6d	36x6, 40x7d	36x5, 42x6d	34x4,
Driver's Seat	Left	Right	Left	Right	Right	Right	Left	Left	.....	Left	Right	Right
Control Levers	Centre	Right	Centre	Right	Right	Right	Centre	Centre	.....	Left	Right	Right

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 GASOLINE MOTOR WAGONS AND TRUCKS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

TRACTORS, LOAD CAPACITY TO 30,000 POUNDS.

Make	Knox Tractor	Mercury Bulley	Phoenix	Transport Tr.	Dominion	Standard Trac.	Allis-Chalmers	Hurlburt	Mack	Old Reliable	Royal	Sterling
Model	35	A	Centiped	T	Tractor	B	A	7 Ton	A C Tractor	.....	A 7	.....
Capacity	.....	.....	.....	10,000	12,000	12,000	14,000	14,000	14,000	14,000	14,000	14,000
Chassis Price.	$4500	$3400	.....	$2500	$3200	$3450	.....	$5000	$3650	$5000	.....	$4750
S. A. E. Rating	40.00	32.40	48.2	19.61	36.15	36.15	44.00	33.75	40	41.62	44.20	36.15
Engine Cyls.	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Single	Block	Pairs	Pairs	Pairs	Block	Pairs	Pairs	Pairs	Pairs
Bore, Stroke.	5x5½	4½x5	5½x7	3½x5½	4¾x5½	4¾x6¾	5¼x7	3¾x5½	5x6	5.1x5¾	5¼x7	4¾x6¾
Valve Location	Head	Opposite	Right	Right	Opposite	Left	T head	Right	Right	Opposite	Opposite	Right
No. Main Bear.	Three	Five	Five	Three	Three	Three	Three	Four	Three	Three	Three	Three
Max. R. P. M.	2000	.....	750	1300	1000	1000	1000	1200	1000	.....	900	950
Lubrication	Pressure	Cir. spl.	Spl. pres.	Cir. spl.	Pressure	Cir. spl.	Oil pump	Spl., pres.	Cir. Spl., Grav.	.....	Spl. pres.	Cir. spl.
Cool. System.	Centrifugal	Centrifugal	Centrifugal	Thermo	Centrifugal	Centrifugal	Water pump	Water pump	Centrifugal	Centrifugal	Water pump	Centrifugal
Radiator Type	Sq.-t. sheet	Cell. sheet	Perfex	Cell. sheet	Fin. cast.	Sq.-t. sheet	Vertical	Fin. tube	Tubular	Sq.-t. sheet	Cell. cast.	Fin. cast.
Carburetor	Zenith	.....	Kingston	Zenith	Schebler	Holley	Stromberg	Fletcher	Optional	Stromberg	Stromberg	Holley
Ignition, Make	Eisemann	.....	Swiss, Dixie	Bosch	Conn.	Bosch	Eisemann	Dual, auto	Bosch	Bosch	Bosch	Eisemann
Type, Control.	Single, hand	....., hand	Hand	Single, fixed	Single, hand	Dual, hand	Hand	Eisemann	Dual, hand	Single, hand	Single, fixed	Dual, auto.
Governor Drive	.....	Motor	Motor	.....	Motor	.....	Engine	Motor	Camshaft	Duplex	Motor	Motor
Speed, M. P. H.	20	12	Five	10	Nine	12	8	12	11.05	.....	10	10
Clutch Type.	Dry plate	Cone	Dry plate	Dry disc	Dry disc	Wet disc	Cone	Dry disc	Dry plate	Wet disc	Wet disc	Dry disc
Trans. Gearset	Selective	Ind. C.	Selective	Selective	Selective	Ind. C.	Selective	Selective	Selective	Selective	Ind. clutch	Selective
Located, Speeds	Amid., three	Unit M, three	Unit, three	Unit M, three	Unit M, three	Amid., three	Amid.	Amid., four	Amid., three	Unit J, four	Amid., three	Unit M, four
Driven by.	Double chain	Double chain	Gears	Top worm	Top worm	Double chain	Chain	Worm	Double chain	Double chain	Double chain	Double chain
Ratio Gear Red.	12.00-1	.....	4.20-1	13.60-1	13.00-1	9.00-1	17.32-1	11.33-1	10.77-1	.....	.....	11.67-1
Tor. Taken by	.....	.....	.....	Springs	Springs	.....	Springs	Torque arm	Unit trans.	.....	Springs	Springs
Propelled by.	Radius rod	Radius rod	.....	Springs	Springs	Radius rod	Radius rods	Radius rod	Radius rod	Radius rod	Radius rod	Radius rod
Springs, For.	½ elliptic	Coil	Spiral	½ elliptic	½ elliptic	½ elliptic	Coil	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic
Springs, Rear.	Cantilever	½ elliptic	Spiral	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	.....	½ elliptic	½ elliptic
Wheelbase	108½	71	162	80	90	72	168	156	119	150	158	168
Tire Type	Solid	Solid	Centiped	Solid	Solid	Solid	Cast steel	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x4, 38x6d	3 wheel, ?	10 sq. ft.	34x4, 34x3½	36x3, 36x4d	36x5, 36x5d	.....	36x6, 40x7d	36x5, 40x5d	36x6, 40x7d	36x7, 40x7d	36x6, 40x7d
Driver's Seat.	Left	Right	Right	Left	Left	Right	Right	Left	Left	Right	Right	Left
Control Levers	Centre	Right	Right	Centre	C. & L.	Right	Right	Centre	Centre	Right	Right	Centre

Make	Dayton	Mack	Walter	Standard Trac.	Mack	Walter	Mack Tractor
Model	E	A C	.....	D	A C Tractor	Tractor T	A C
Capacity	15,000	15,000	15,000	20,000	22,000	24,000	30,000
Chassis Price.	$4950	$4600	$5250	$4250	$4250	$5000	$4600
S. A. E. Rating	14.20	40.00	30.65	36.15	40.00	30.65	40.00
Engine Cyls.	Four	Four	Four	Four	Four	Four	Four
How Cast	Pairs	Pairs	Block	Pairs	Pairs	Block	Pairs
Bore, Stroke.	5¼x7	5x6	4⅜x6	4¾x6¾	5x6	4⅜x6	5x6
Valve Location	Opposite	Right	Right	Left	Right	Right	Right
No. Main Bear.	Three	Three	Three	Three	Three	Three	Three
Max. R. P. M.	1000	1000	.....	1000	1000	.....	1000
Lubrication	Cir. spl.	Spl. pres.	Cir. spl.	Cir. spl.	Cir. Spl., Grav.	Cir. spl.	Spl. pres.
Cool. System.	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Radiator Type	Fin. cast.	Tubular	Fin. sheet	Sq.-t. sheet	Tubular	Fin. sheet	Tubular
Carburetor	Stromberg	Optional	Zenith	Holley	Optional	Zenith	Optional
Ignition, Make	Bosch	Bosch	Eisemann	Bosch	Bosch	Eisemann	Bosch
Type, Control.	Dual, hand	Dual, hand	Single, auto.	Dual, hand	Dual, hand	Single, auto.	Dual, hand
Governor Drive	Duplex	Motor	Motor	.....	Camshaft	Motor	Motor
Speed, M. P. H.	10	Dry plate	10	Eight	10.28	10	8.44-1
Clutch Type.	Wet disc	10.28	Cone	Wet disc	Dry plate	Cone	Dry plate
Trans. Gearset	Selective	Selective	Selective	Ind. C.	Selective	Selective	Selective
Located, Speeds	Unit J, four	Amid., three	Unit M, four	Amid., three	Amid., three	Unit M, four	Amid., three
Driven by.	Double chain	Double chain	Spur-g., four	Double chain	Double chain	Spur-g., four	Double chain
Ratio Gear Red.	12.00-1	11.58-1	.....	18.00-1	11.58-1	.....	14.10-1
Tor. Taken by	.....	Radius rod	Springs	.....	Unit trans.	Springs	Radius rod
Propelled by.	Radius rod	Radius rod	Springs	Radius rod	Radius rod	Springs	Radius rod
Springs, For.	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear.	Platform	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	148	156, 168, 180	144	76	119	108	119
Tire Type	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x7, 42x6d	36x7, 40x7d	40x6, 40x6d	36x5, 40x6d	36x6, 40x6d	40x4d, 40x4d	36x7, 40x7d
Driver's Seat.	Left	Left	Left	Right	Left	Left	Left
Control Levers	Centre	Centre	Centre	Right	Centre	Centre	Centre

The tabulation on this and the preceding pages presents the brief specifications of 523 different gasoline engined power trucks or wagons, built by 183 different manufacturers, a large number of which are published for the first time.

Many trucks are continued with comparatively little change when contrasted with the constructional details of the previous year, these being designs that may be regarded as standardized.

One will note that the prices have been revised, however, and as a rule these have been somewhat advanced.

The tabulation is the most complete ever published, including as it does the detail of vehicles built by 183 of the 276 different concerns of the industry.

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 ELECTRIC WAGONS, TRUCKS AND TRACTORS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY 750 POUNDS.

Make	Connorsville	Ward
Model	.....	W S
Capacity	750	750
Price, with Bat.	$750	.....
Price, No Bat.	$600	.....
No. Motors	One	One
Location	.....	Amid.
Make of Motor	G. E.	.....
Type Winding	Series	Series
Voltage-H. P.	.....	.....
Speed, Light	14	.....
Speed, Loaded	.....	10-12
Con. Located	.....	U. floor
Con. Speeds	4, r 2	4, r 2
Reduction Gear	.....	.....
Final Drive	Herring	Sp. bev.
Total Gear Red.	.....	6.10-1
Tor. Taken by	Torsion tube	Springs
Propulsion by	.....	Springs
Springs, For	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic
Wheelbase	80	88
Type Tires	Solid	Solid
Tire Sizes	.....	32x2½, 32x2½
Driver's Seat	Left	Left
Con. Lever	Left	Left
Bat. Location	U. R., U & H.	U. seat
Bat. Make, Type	Philadelphia	.....
No. Cells, Trays	16, 2	.....
Amp. Hrs. Cap.	204	.....
Mileage, Light	.....	.....
Mil., Loaded	.....	35-45

Commercial	Eagle	G. V.
.....	D	1916
1000	1000	1000
.....	$985	$1740
$1500	$750	.....
Two	One	One
Unit A	Centre	Rear
G. E.	G. E.	G. E.
Series	Series	Series
60, 85	42	85, 2
15	18-20	14
13	16-18	12
O floor	Front	U. seat
4, r 2	4, r 2	5, r 2
Spur gear	Shaft	Single chain
Spur gear	Shaft	Double chain
10.00-1	9.00-1	14.89-1
Springs	Torsion tube	Radius rod
Radius rod	Rad. rod	Radius rod
¾ elliptic	½ elliptic	¼ elliptic
½ elliptic	Cantilever	½ elliptic
90	110	89
Solid	Pneumatic	Solid
36x3, 36x3	32x3½	36x2½, 36x2½
Left	Left	Left
U. wheel	Top	Left seat
Amid-u.	U seat	Amid-u.
Edison or Lead	Own	13 GVX
60-6, 42-5	21	44, 4
Optional	210	153
.....	.....	.....
.....	60-75	50

LOAD CAPACITY 1000 POUNDS.

G. V.	Lansden	Walker	Ward	Atlantic	Commercial	G. M. C.
.....	M	M	E O	1 C	.....	2
1000	1000	1000	1000	2000	2000	2000
$2050	$2460	.....	.....	.....	.....	$2305
.....	$1650	.....	.....	.....	$1800	$1300
One	One	One	One	One	Two	One
Amid.	Unit J	Unit X	Amid.	Amid.	Unit A	Rear
G. E.	G. E.	West.	.....	G. E.	G. E.	G. E.
Series	Series	Series	Series	Series	Series	Series
85-2	60	60-36, 80-32	80	85	60, 85	60, 3½
14	.....	15	.....	12	14	11
12	12	14	10	*10	12	11
U. seat	U. hood	U. seat	U. seat	U. seat	O floor	U. hood
5, r 2	4, r 2	5, r 5	4, r 2	4, r 2	4, r 2	5, r 1
.....	Bevel	.....	Single, chain	Single chain	Spur gear	Bevel
Top worm	Double chain	Spur gear	Double chain	Double chain	Spur gear	Double chain
9.00-1	8.00-1	17.00-1	.....	Strut rod	11.50- 1	11.00-1
Springs	Springs	Springs	Springs	Radius rod	Springs	Springs
Springs	Radius rod	Springs	Radius rod	½ elliptic	Radius rod	Radius rod
½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
108	90	90, optional	90	103	100	118
Solid	Solid	Solid	Solid	Solid	Solid	Solid
36x3, 36x3	36x2½, 36x3	34x3, 36x3½	32x2½, 34x3	34x3½, 36x4	36x3½, 36x4	32x3½, 32x4
Left	Left	Left	Left	Left	Left	Left
Left seat	U. wheel	Left	Left	Seat	U. wheel	T. wheel
U. hood	Amid-u.	Amid-u.	Amid-u.	Amid., U	Amid, U	U seat
15 GVX	Edison, A4	Optional	.....	Exide, Edison	Edison or Lead	Edison, A5
44, 4	60, 10	60, 44	42, 3	Exide, Edison	60-6, 42-5	60
178½	.....	Optional	127	.....	Optional	187.5
.....	.....	40 to 75	.....	.....	.....	50
65	60	40 to 75	45	45	.....	42

LOAD CAPACITY, 2000 AND 3000 POUNDS.

Make	G. V.	Lansden	Walker	Ward	G. M. C.
Model	1916	M	K	W B	3
Capacity	2000	2000	2000	2000	3000
Price, with Bat.	$2170	$2100	.....	.....	$2650
Price, No Bat.	.....	$1900	.....	.....	$1450
No. Motors	One	One	One	One	One
Location	Rear	Unit J	Unit X	Forward	Rear
Make of Motor	G. E.	G. E.	West.	.....	G. E.
Type Winding	Series	Series	Series	Series	Series
Voltage-H. P.	85, 2¾	60	60-36, 80-32	.....	60, 4
Speed, Light	12	.....	14	.....	10
Speed, Loaded	10	10	13	9-11	10
Con. Located	U. seat	U. hood	U. seat	U. seat	U. hood
Con. Speeds	5, r 2	4, r 2	5, r 5	4, r 2	5, r 1
Reduction Gear	Single chain	Bevel	.....	Worm	Bevel
Final Drive	Double chain	Double chain	Spur gear	Worm	Double chain
Total Gear Red.	10.76-1	10.00-1	17.00-1	.....	12.20-1
Tor. Taken by	.....	Springs	Springs	Springs	Springs
Propulsion by	Radius rod	Radius rod	Springs	Springs	Radius rod
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	104	106	92, optional	102	130
Type Tires	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x3½, 36x3½	36x3, 36x3½	36x3½, 36x4	34x3½, 36x4	32x4, 32x5
Driver's Seat	Left	Left	Left	Left	Left
Con. Lever	Left seat	U. wheel	Left	Left	T. wheel
Bat. Location	Amid-u.	Amid-u.	Amid., four	Amid-u.	U seat
Bat. Make, Type	17 GVX	Edison, A6	Edison or Lead	.....	Edison, A6
No. Cells, Trays	44, 5	60, 10	60, 44	.....	60
Amp. Hrs. Cap.	204	.....	Optional	.....	225
Mileage, Light	.....	.....	40 to 75	.....	50
Mil., Loaded	55	60	40 to 75	38-40	40

LOAD CAPACITY 4000 POUNDS.

Atlantic	Commercial	Couple Gear	G. M. C.	G. V.	Lansden	Walker
2 C	.....	H F L Tractor	4	1916	M	L
4000	4000	4250	4000	4000	4000	4000
.....	.....	$3350	$2850	$2650	$3910	.....
.....	$2200	.....	$1650	.....	$2350	.....
One	Two	One	One	One	One	One
Amid.	Unit A	In wheel	Rear	Rear	Unit J	Unit X
G. E.	G. E.	C. G.	G. E.	G. E.	G. E.	West.
Series	Series	Series	Series	Series	Series	Series
85	60, 85	80, 3	60-4	85, 4½	60	60-45, 80-45
11	12	10	Eight	11	.....	13
9	10	Seven	Eight	Nine	Nine	12
U. seat	O floor	Btw. seats	U. hood	U. seat	U. hood	U. seat
4, r 2	4, r 2	4, r 4	5, r 1	5, r 2	4, r 2	5, r 5
Single chain	Spur gear	18 to 11	Bevel	Single chain	Bevel	.....
Double chain	Spur gear	Bevel f.	Double chain	Double chain	Double chain	Spur gear
.....	12.14-1	25.00-1	12.20-1	11.61-1	13.00-1	17.00-1
Strut rod	Springs	Springs	Springs	.....	Springs	Springs
Radius rod	Radius rod	Springs	Radius rod	Radius rod	Radius rod	Springs
½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
115½	116	80	138	112½	120	107, optional
Solid	Solid	Solid	Solid	Solid	Solid	Solid
34x4, 36x3d	36x5, 36x3½d	36x5, 30x3½	32x4, 36x3½d	36x4, 36x3d	36x4, 36x3d	38x4, 38x6
Left	Left	Right	Left	Left	Left	Left
Left	U. wheel	Btw. seats	T. wheel	Left seat	U. wheel	Left
Amid., U.	Amid-u.	Amid-u.	U seat	Amid-u.	Amid-u.	Amid-u.
Exide, Edison	Edison or Lead	U.S.L., W.B.T.	Edison, A6	21 G V X	Edison, A8	Edison or Lead
Exide, Edison	60-8, 42-6	40, 4	60	44, 6	60, 10	60, 44
.....	Optional	160	225	225	.....	Optional
.....	.....	30	40	.....	.....	40 to 60
45	.....	35	33	55	50	40 to 60

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MECHANICAL SPECIFICATIONS OF AMERICAN 1917 ELECTRIC WAGONS, TRUCKS AND TRACTORS.

For Manufacturers' Names, Addresses and Other Detail, See General Indices.

LOAD CAPACITY, 4000 TO 10,000 POUNDS.

Make	Ward	Walker	Atlantic	Commercial	Couple Gear	G. M. C.	G. V.	Lansden	Ward	Walker	Atlantic	Commercial
Model	W D	D	3 C	.....	H	7	1916	M	W F	E	5 C	.....
Capacity	4000	6000	7000	7000	7000	7000	7000	7000	7000	8000	10,000	10,000
Price, with Bat.	.....	.....	.....	.....	$4800	$3560	$3310	$4730	.....	.....	.....	.....
Price, No Bat.	.....	.....	.....	$3100	$4100	$2000	.....	$2750	.....	.....	.....	$3500
No. Motors	One	One	One	Four	Four	One	One	One	One	One	One	Four
Location	Forward	Unit X	.....	Unit A	In wheel	Rear	Rear	Unit J	Forward	Unit X	Amid.	Unit A
Make of Motor	.....	West.	G. E.	G. E.	C. G.	G. E.	G. E.	G. E.	.....	West.	G. E.	G. E.
Type Winding	Series	Series	Series	Series	Series	Series	Series	Series	Series	Series	Series	Series
Voltage-H. P.	.....	60-70, 80-62	85	60, 85	88, 12	60, 5¾	85, 5½	60	.....	60-70, 80-62	85	60, 85
Speed, Light	.....	12	10	11	10	Seven	10	.....	.....	11	9	Nine
Speed, Loaded	7½-9	11	8	Nine	Eight	Seven	Eight	Seven	6-7½	10	7	Seven
Con. Located	U. seat	U. seat	U. seat	O floor	Btw. seats	U. hood	U. seat	U. hood	U. seat	U. seat	U. seat	O floor
Con. Speeds	4, r 2	5, r 5	4, r 2	4, r 2	5, r 5	5, r 1	5, r 2	4, r 2	4, r 2	5, r 5	4, r 2	4, r 2
Reduction Gear	Worm	.....	Single chain	Spur gear	.....	Bevel	Single chain	Bevel	Worm	.....	Single chain	Spur gear
Final Drive	Worm	Spur gear	Double chain	Spur gear, 4	Bevel, four	Double chain	Double chain	Double chain	Worm	Spur gear	Double chain	Spur gear, 4
Total Gear Red.	.....	16.00-1	.....	17.32-1	25.00-1	12.70-1	13.95-1	13.00-1	.....	16.00-1	.....	20.14-1
Tor. Taken by	Springs	Springs	Strut rod	Springs	Torsion arm	Springs	.....	Springs	Springs	Springs	Strut rod	Springs
Propulsion by	Springs	Springs	Radius rod	Radius rod	Radius rod	Radius rod	Radius rod	Radius rod	Springs	Springs	Radius rod	Radius rod
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	114	126, optional	.....	115	96	150	132½	130	132	130, optional	144	132
Type Tires	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Tire Sizes	36x4, 38x6	36x5, 38x4d	36x5, 40x4d	36x3½d, 36x4d	36x4d, 36x4d	32x5, 36x4d	36x6, 36x4d	36x5, 36x4d	38x6, 40x8	38x5, 38x5	36x6, 40x5d	36x4d, 36x5d
Driver's Seat	Left	Left	Left	Left	Right	Left	Left	Left	Left	Left	Left	Left
Con. Lever	Left	Left	Left	U. wheel	Btw. seats	T. wheel	Left seat	U. wheel	Left	Left	U. seat	U. wheel
Bat. Location	Amid-u.	Amid-u.	Amid. U.	Amid-u.	Amid-u.	U seat	Amid-u.	Amid-u.	Amid-u.	Amid-u.	Amid., U.	Amid-u.
Bat. Make, Type	.....	Edison or Lead	Exide, Edison	Edison or Lead	U.S.L., W.B.T.	Edison, A8	27 GVX	Edison, A10	.....	Edison or Lead	Exide, Edison	Edison or Lead
No. Cells, Trays	.....	60, 44	Exide, Edison	60-8, 42-6	44, 6	60	44, 6	60, 10	.....	60, 44	Exide, Edison	60-8, 42-9
Amp. Hrs. Cap.	.....	Optional	.....	Optional	275	300	331	.....	.....	Optional	.....	Optional
Mileage, Light	.....	40 to 50	.....	.....	40	41	.....	.....	.....	40 to 50	.....	.....
Mil., Loaded	30-35	40 to 50	45	.....	30	32	50	50	25-30	40 to 50	45	.....

LOAD CAPACITY, 10,000 TO 30,000 POUNDS.

Make	Couple Gear	G. M. C.	G. V.	Lansden	Walker	Ward	Couple Gear	G. M. C.	Lansden	Walker
Model	A	10	1916	M	N	W H	A F	12	Tractor	Tractor No. 3
Capacity	10,000	10,000	10,000	10,000	10,000	10,000	12,000	12,000	20,000	30,000
Price, with Bat.	$5500	$4330	$3730	$5490	.....	.....	$4500	$4840	$2910	.....
Price, No Bat.	$4300	$2350	.....	$3150	.....	.....	$3800	$2500	$2350	.....
No. Motors	Four	One	One	One	One	One	Two	One	One	One
Location	In wheel	Rear	Rear	Unit J	Unit X	Forward	In wheel	Rear	Rear	Unit X
Make of Motor	C. G.	G. E.	G. E.	G. E.	West.	.....	C. G.	G. E.	G. E.	West.
Type Winding	Series	Series	Series	Series	Series	Series	Series	Series	Series	Series
Voltage-H. P.	88, 12	60, 7	85, 7	60	60-70, 80-62	.....	96, 6	60, 7	60	.....
Speed, Light	Eight	Seven	Nine	.....	11	.....	Seven	6½	Eight	Eight
Speed, Loaded	Seven	Seven	Seven	Six	10	5-6	Six	6½	Five	Six
Con. Located	Btw. seats	U. hood	U. seat	U. hood	U. seat	U. seat	Btw. seats	U. hood	U. seat	U. seat
Con. Speeds	5, r 5	5, r 1	5, r 2	4, r 2	5, r 5	4, r 2	4, r 4	5, r 1	4, r 2	5, r 5
Reduction Gear	.....	Bevel	Single chain	Bevel	.....	Worm	.....	Bevel	Single chain	.....
Final Drive	Bevel, four	Double chain	Double chain	Double chain	Spur gear	Worm	Bevel f.	Double chain	Double chain	Spur gear
Total Gear Red.	25.00-1	15.70-1	13.95-1	14.50-1	16.00-1	.....	25.00-1	15.70-1	9.00-1	.....
Tor. Taken by	Torsion arm	Springs	.....	Springs	Springs	Springs	Torsion arm	Springs	Springs	Springs
Propulsion by	Radius rod	Radius rod	Radius rod	Radius rod	Springs	Springs	Radius rod	Radius rod	Radius rod	Springs
Springs, For	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Springs, Rear	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic	½ elliptic
Wheelbase	98	166	141½	142	130	144	110	174	58	74
Type Tires	Solid	Solid	Solid	Solid	Solid	Solid	S. & St.	Solid	Solid	Solid
Tire Sizes	37x5d, 37x5d	36x6, 36x6d	36x7, 36x5d	36x6, 36x5d	36x7, 38x6d	40x8, 42x10	36x5d, 60x5	36x6, 36x7d	30x4, 30x5	34x4, 38x6
Driver's Seat	Right	Left	Left	Left	Left	Left	Right	Left	Left	Left
Con. Lever	Btw. seats	T. wheel	Left seat	U. wheel	Left	Left	Btw. seats	T. wheel	U. wheel	Left
Bat. Location	Amid-u.	U seat	Amid-u.	Amid-u.	Amid-u.	Amid-u.	Amid., U.	U. seat	Amid-o.	Top of frame
Bat. Make, Type	U.S.L., W.B.T.	Edison, A10	31 GVX	Edison, A12	Edison or Lead	.....	U.S.L., W.B.T.	Edison, A10	Edison, A8	Edison or Lead
No. Cells, Trays	44, 6	60	44, 6	60, 10	60, 44	.....	48, 6	60	60, 10	60, 44
Amp. Hrs. Cap.	300	375	382	.....	Optional	.....	325	375	.....	Optional
Mileage, Light	35	35	.....	.....	40 to 50	.....	40	32	.....	Optional
Mil., Loaded	25	27	45	50	40 to 50	20-25	35	24	60	Optional

For Complete Series of Models and Prices of Any Given Manufacturer, See General Index Preceding the Specification Tabulation.

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April's Record of New Buildings

Projects Contemplated and Alterations of Garages, Repair Shops, Service Stations and New Plants.

Arkadelphia, Ark.; John W. Allen & Son; one-story brick garage, 50x136; $8000.

Harrison, Ark.; George W. O'Neal; one-story garage; $10,000.

Buena Vista, Col.; Louis DeWitt; one-story garage, 55x120; $10,000.

Denver, Col.; Denver Gas and Electric Co.; one-story garage, 66x20; $8000.

Naugatuck, Conn.; Union City Garage, Inc.; one-story garage, 48x60.

South Norwalk, Conn.; Berman & Steinberg, 64 Water street; two-story garage, 80x30.

Alton, Ill.; Dallas Hughy; 1½-story garage, 20x26; $3000.

Chicago, Ill.; Charles W. Ferguson, 1653 Howard street; one-story public garage; $35,000.

Chicago, Ill.; J. Jorgensen, 3241 North avenue; one-story private garage, 24x30; $9000.

Chicago, Ill.; Louis Schiffman, 2514 Chicago avenue; one-story public garage, 40x22; $1200.

Chicago, Ill.; N. Robinson; one-story public garage, 53x156; $12,000.

Chicago, Ill.; Joseph Zedek, 4021 North avenue; one-story garage, 48x57; $600.

Chicago, Ill.; A. R. Durkee, 35 S. Dearborn street; one-story private garage, 33x35; $4000.

Monticello, Ill.; G. I. Rudisill; one-story garage, 100x120; $6000.

Oak Park, Ill.; John Butendorf, 836 Belleforte avenue; one-story private garage, 20x20; $3500.

Oak Park, Ill.; T. A. Holm & Co., 947 W. Harrison street; one-story private garage, 22x40; $1500.

Oquawka, Ill.; Oquawka Auto Company; one-story garage, 50x100; $8000.

Peoria, Ill.; E. F. Hayden, 313 Main street; one-story garage, 50x150; $15,000.

Quincy, Ill.; Irwin-Overland Co.; one and two-story garage, 80x190; $30,000.

Robinson, Ill.; C. F. Chandler; one-story garage, 48x112; $12,000.

Goshen, Ind.; W. D. Platter; one-story public garage, 66x165; $10,000.

Decatur, Ia.; Decatur Motor Car Co.; one-story garage, 56x90; $4500.

Griswold, Ia.; Grennell & Hully; two-story garage, 50x120; $15,000.

Sioux City, Ia.; A. Davidson; one-story public garage, 30x60; $7000.

Coffeyville, Kan.; J. L. Overlee; one-story garage, 100x140; $15,000.

Larkin, Kan.; M. M. Judd Motor Co.; one-story garage, 50x20; $15,000.

Manhattan, Kan.; H. B. Winters; one-story garage, 50x150; $10,000.

Wichita, Kan.; J. S. Giwosky; one-story garage, 50x140; $7000.

Paducah, Ky.; Foreman Automobile Co.; two-story brick garage, 60x176; fireproof; glass front; $30,000.

Baltimore, Md.; Tire Co., 135 W. Mt. Royal avenue; one-story garage, 30x24; $1500.

Baltimore, Md.; P. J. Hentschell, 703 Hillen street; one and two-story garage, 100x40; $6000.

Everett, Mass.; Liberato Antico; one-story garage, 80x122; $5500.

Revere, Mass.; George Bush, 16 Dana street; one-story garage, 77x75.

Grand Rapids, Mich.; Dr. A. Vanderstolp, 141 Monroe avenue, N. W.; two-story public garage, 50x44; $15,000.

New Prague, Minn.; New Prague Foundry Co.; one-story public garage, 108x40; $20,000.

South St. Paul, Minn.; J. J. Sheldon, 133 N. Concord street; one or two-story garage and repair shop, 100x175; $60,000.

Kansas City, Mo.; F. H. Thwing, 216 Finance building; two-story garage, 50x200; $20,000.

Kansas City, Mo.; Clyde F. Mack, 6 West 43rd street; one-story private garage, 26x26; $1500.

Sikeston, Mo.; E. C. and Joe L. Matthews; two-story garage, 20x40; $3000.

St. Louis, Mo.; Charles F. May, 408 Merchants Laclede building; two-story public garage, 40x70; $20,000.

St. Louis, Mo.; Roesch Furniture Co.; 1541 S. Broadway; one-story garage, 25x35; $1500.

Blair, Neb.; G. Rathman; two-story garage, 120x100; $40,000.

Hastings, Neb.; Kerr Estate; three-story garage, 66x125; $50,000.

Omaha, Neb.; Gordon & Kennedy; three-story garage, 72x190; $25,000.

Scottsbluff, Neb.; Scottsbluff-Overland Co.; two-story garage and salesroom, 50x140; $15,000.

Camden, N. J.; Elmer Cox, Eighth and Pine streets; one-story public garage, 22x130; $8000.

Newark, N. J.; Leman Realty Co., 738 Broad street; one-story garage and show room, 56x208; $16,000.

Newark, N. J.; Paul Rathman, 85 Chadwich avenue; one-story public garage, 53x50; $4500.

Newark, N. J.; Weisberger & Gitkin, 96 Hunterdon street; one-story public garage, 75x73 and 68x93; $10,000.

Binghamton, N. Y.; Security Garage Company, Security Manual building; one-story garage and storage station; $30,000.

Brooklyn, N. Y.; Louis Gold, 40 Court street; two-story garage, 80x90; $20,000.

Brooklyn, N. Y.; Marmur Holding Company, 188 Montague street; one-story public garage, 200x130; $50,000.

Brooklyn, N. Y.; Lancastershire Realty Co., 4 Court street; one-story public garage, 200x143; $85,000.

Brooklyn, N. Y.; Frank W. Cullen, 50 Sanford street; one-story garage, 50x100; $4000.

Brooklyn, N. Y.; G. Gaemaro, 359 Metropolitan avenue; one-story garage, 35x75; $6000.

Brooklyn, N. Y.; New Era Homes Corp., 189 Montague street; one-story garage, 10x16; $3000.

Brooklyn, N. Y.; Joseph Crocker, 856 Nostrand avenue; one-story public garage, 100x331; $30,000.

Brooklyn, N. Y.; J. Bernstein, 8 Tompkins avenue; one-story garage, 20x40; $2500.

Brooklyn, N. Y.; Borough Park Garage, Inc.; 116 W. 29th street; one-story garage, 60x95; $10,000.

Brooklyn, N. Y.; Rose & Jennie Pirnenio, 573 Sackett street; one-story garage, 37x50; $5000.

Brooklyn, N. Y.; D. & K. Realty Co., 264 Van Buren street; one-story public garage, 40x100; $15,000.

Brooklyn, N. Y.; Hulweiker Briggs Co., 14 Hall street; one-story public garage, 42x104; $12,000.

Brooklyn, N. Y.; Barnard Lashowitz, 1765 Union street; one-story public garage, 37x85x100; $14,000.

Brooklyn, N. Y.; Philips Caplain, 16 Court street; four-story garage, 100x100; $100,000.

Brooklyn, N. Y.; David Weiss, 467 Watkins avenue; one-story public garage, 40x100; $12,500.

Brooklyn, N. Y.; Charles Infanger & Son, 2634 Atlantic avenue; three-story garage and repair shop, 40x57; $20,000.

Easthampton, L. I., N. Y.; Frank J. Hedges; one-story public garage; $9000.

Geneva, N. Y.; D. Dorman; one-story public garage, 90x123; $8000.

Long Island City, L. I., N. Y.; Alice McDonough, 65 Fourth street; one-story garage, 50x100; $10,000.

New York, N. Y.; C. Rosenweil, 95 Flatbush avenue, and A. H. Scott, Jr., 268 Dean street, Brooklyn, one-story garage, 25x100; $5000.

New York, N. Y.; Jacob Oshlag, 1061 Madison avenue; four-story garage, 50x100; $45,000.

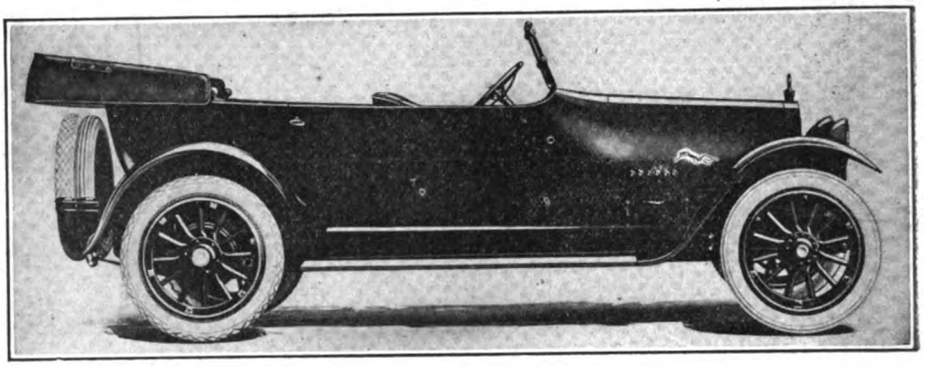
New York, N. Y.; Louis Kullman, Broadway and 100th street; six-story garage, 56x100; $80,000.

New York, N. Y.; B. H. and Charles N. Whinston, 509 Willis avenue; six-story garage, 40x50; $70,000.

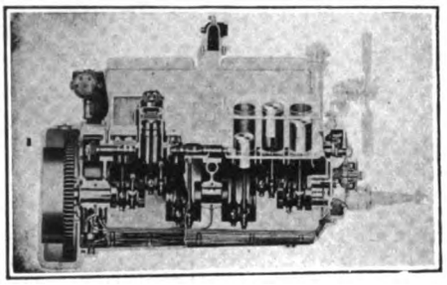
New York, N. Y.; A No. 1 Building Corporation, 4925 Broadway; two-story garage, 99x100; $20,000.

New York, N. Y.; James C. Gaffney, 1148 Tiffany street; one-story garage, 75x96; $23,000.

Kissel Double Six Features



Twelve-Cylinder, Seven-Passenger Touring Car, Manufactured by the Kissel Motor Car Co. of Hartford, Wis. Priced at $2250. Described in Detail in Automobile Journal, March 25, 1917.



Engine, 12 Cylinders, Cast in Four Blocks of Three.

Bore and Stroke, 2⅞x5.

Horsepower (S. A. E.), 39.7. (Brake), 82.

Ignition, Kissel-Delco.

Starting and lighting, Kissel-Delco

Carburetor, Kissel-Stromberg.

Fuel feed, Stewart vacuum.

Cooling, by pump.

Clutch, multiple disc.

Gearset, 3 speed, unit with engine.

Rear axle, full floating.

Wheelbase, 128 inches.

Tire sizes, 34x4½ inches.

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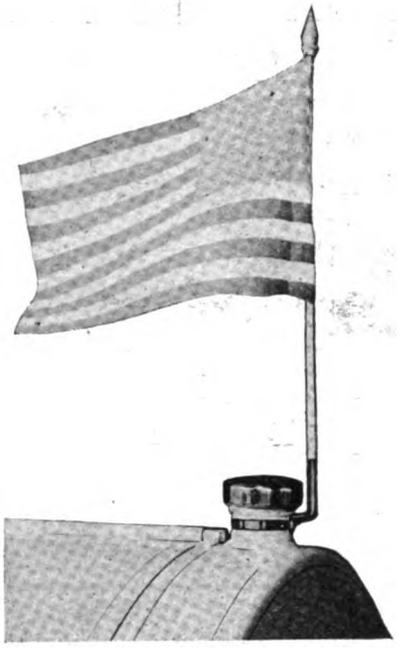
Useful Accessories for Motor Car Operators.

Products of 1917 Present a Wide Variety of New and Improved Equipment of Interest Everywhere to Owners and Garage Men

FLAG HOLDER.

A unique flag and pennant holder for motorists desiring to show their patriotism by displaying the Stars and Stripes on their cars, is being marketed. The holder is secured to the filler tube of the radiator by a novel band arrangement, which is securely locked in place by the fingers, and is adjustable to all makes of pleasure cars and trucks. One of the features of the design is that the flag holder proper may be set and locked in any desired position with the fingers and two or more flags may be used. The design takes flags up to and including ¼ inch in diameter, and does not interfere with the removal or replacement of the radiator cap.

Manufactured by the Shattuck Mfg. Co., 100 Park Place, New York, N. Y. Price, 25 cents each. Special proposition for dealers.



Flag Holder.

THE LENNON LIGHT.

The Lennon light, patent rights to which have just been affirmed by the United States Court of Appeals, is a flexible brass reflector, heavily plated, which throws the beams of light on the road and at the approved height from the ground stops the glare which is prohibited by statute in many states. It is made in two sizes and will fit any headlight. The protectors are light in weight and simple of construction, having no springs or extra parts to become broken. They are attached without removing the bulb from the headlight, the operation being to place the eyelet of the protector over the tip of the bulb and pressing it into position, where it is held firmly. Those rays of light that ordinarily would be thrown outward and upward into the eyes of oncoming motorists and pedestrians are reversed and directed downward. The patent rights have been purchased outright by J. H. Faw, Inc., and the business of the manufacture and sale of this reflector is now exclusively in their hands.

Manufactured by J. H. Faw, Inc., 41 Warren St., New York City. Retail price, per pair, $1.

Warner Wheeltilt.

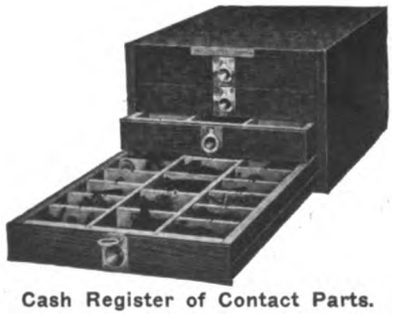
Action of Lennon Light Protector.

"CASH REGISTER" CONTACT PARTS.

The "Cash Register" of contact parts, which has been placed on the market to facilitate the handling of contact parts by dealers is a neat cabinet, seven inches high by 10⅝ inches wide by 14¼ inches long and contains four drawers, each having 19 compartments. Each compartment is labeled as to its contents, making it easy for the dealer to place his hand on any part without delay and also enabling him to keep track of his stock and to tell at a glance what he is short of and prevents over stocking of parts.

The assortment that it contains is arranged so that a full set of contact parts can be supplied for any one of 66 different makes of cars. The dealer has the privilege of exchanging the parts that do not sell readily for others for which there is a big demand. The "cash register" is given free with a purchase of parts totaling $109.16, retail price, subject to dealer's discount.

Made by Paul G. Niehoff & Co., Inc., Dept. A., Metallurgical Laboratories, Chicago, Ill.



Cash Register of Contact Parts.

WARNER WHEELTILT.

The Warner wheeltilt consists of two hinged castings, the lower of which fastens on the steering post after the Ford wheel has been removed, and to the upper casting the wheel is attached, held there by the Ford steering wheel nut. A locking latch securely locks the wheel when in driving position by virtue of a spring back of the lock plunger. A slight pull on the latch releases the wheel so that it can be tilted upward to allow the driver room to leave or enter the car even when accompanied by a passenger in the front seat. Due to its simplicity it is assembled with a very few minutes work with a wrench.

Manufactured by Warner Gear Co., Muncie, Ind. Price, $1.50.

RESISTOIL AIR HOSE.

An important item both about the automobile and the garage is the air hose. Rubber is very susceptible to compressed air and oil fumes and becomes porous after a period of use from friction and impurities of the air passing through it. The Resistoil hose in outward appearance is very much like any five-ply air hose, but the real value and wearing qualities is in the inner tube and the special construction of the outer walls. This hose is designed to stand the wear and overcome the sources of annoyance to every user of compressed air.

Manufactured by Brunner Manufacturing Co., Utica, N. Y. Prices from 16 to 27 cents per foot according to size.

AIR VALVE SPARK PLUG.

The Blue Ribbon automatic auxiliary air valve spark plug is a plug which has just been introduced to the trade as a plug with a special feature never before applied in spark plug construction. An automatic auxiliary air valve is fitted in the side of the plug, which automatically opens and closes with the working of the engine. Through a graduated inlet hole in the air valve cage, air is drawn on the

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intake stroke of the engine, through the spark plug body into the combustion chamber, this air inlet being opened and closed by a lever attached to the valve cage.

In installing a set of these spark plugs in an engine the levers regulating the air are connected with the gasoline throttle and accelerator, being automatically controlled in this way, according to the gas supply and speed of the engine.

It is claimed for this plug that it always insures perfect ignition, due to the fact that the suction of air through the spark chamber keeps the passage and porcelain absolutely clear of all short circuiting substances, and admits just the proper amount of air to form a perfect mixture of gas, at the same time showing a large saving of gasoline. It is likewise claimed that this spark plug eliminates oil pumping troubles and irregular engine firing.

Manufactured by International Spark Plug Co., Inc., Indianapolis, Ind. Prices and literature upon request.

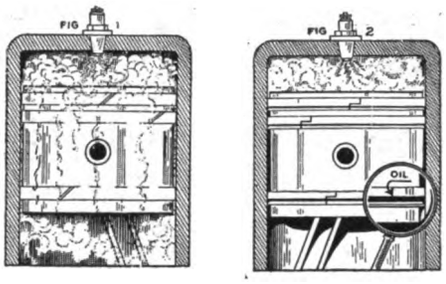
NO-LEAK-O PISTON RING.

Few motorists realize the havoc wrought to the engine by the refuse or coal oil which will not vaporize contained in gasoline escaping by the pistons into the crank case and decreasing the lubricating qualities of the oil therein contained. Engineers are trying to educate the motoring public to demand tight fitting pistons and rings so as to prevent this evil. Of course it is perfectly obvious that gasoline or coal oil is not a good lubricant and it does not take much speculation to determine what will happen to an engine if steps are not taken to prevent leakage into the crank case from the explosion chamber. A frequent draining of the crank case oil is to a certain extent helpful, but costly. The No-Leak-O oil sealing ring, which is being placed upon the market, is claimed to remedy such evils, it being claimed that the deep groove cut around the face of the ring, with a scraping edge, in combination with the lap joint, forms a perfect seal of oil. That is to say, with a groove full of oil all around the ring the gas cannot escape, nor the refuse from poor gasoline get by it. The difference between the plain ring and the No-Leak-O ring is diagramatically illustrated herewith. Not only does the No-Leak-O ring keep the gasoline from passing into the base of the engine, but also prevents the seepage of oil into the combustion chamber.

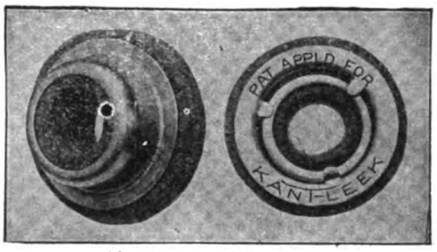
Manufactured by the Automobile Accessories Co., 816 W. North Ave., Baltimore, Md. Prices upon request.

BAY STATE AUTOKIT.

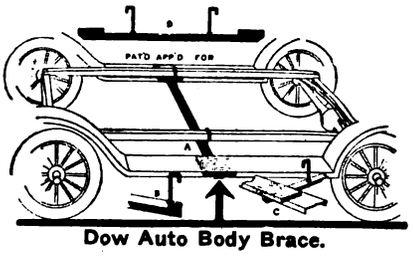
The car owner, as well as the repair man, needs a set of socket wrenches. The repair man should have a complete set, one that will cover the range of standard and special bolts found in the various cars. The owner needs a set designed to fit bolts upon his particular machine. This want may be filled with the Bay State Autokit, sets of such



Application of No-Leak-O Piston Ring.

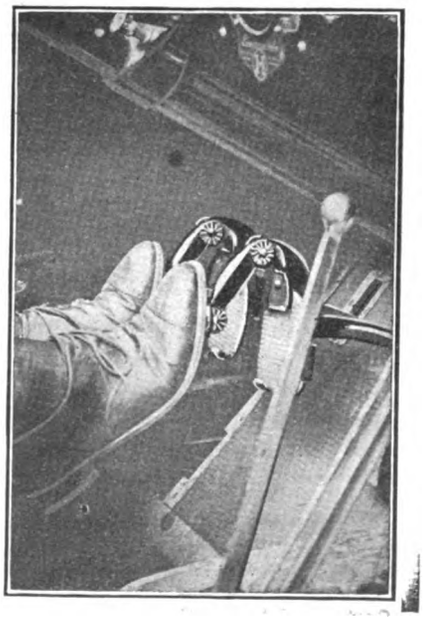


Kant-Leek Washer.



Dow Auto Body Brace.

Bay State Autokit.



Extension Pedal.

wrenches designed for saving time and money, fitting practically every bolt, nut or cap screw of any car or truck now on the market. Illustration shows a Ford car outfit complete with 10 sockets and a shank with ratchet, compactly packed in a neat box for the tool kit.

Marketed by Geo. A. Cutter, Taunton, Mass. Ford car outfit $4. Other prices upon request.

KANT-LEEK WASHERS.

Grease and dirt upon hubs and wheels, oil rotted tires and inefficient brakes, are results of oil leakage from the rear axle of an automobile. Kant-Leek Washers for Ford cars are made to remedy grease and oil leakage from the rear axle. These washers are easy to apply and require no adjustment once they are put into place.

Manufactured by Kant-Leek Mfg. Co., St. Louis, Mo. Distributed by Harry Becker, room 306 Monroe Bldg., 112 S. Michigan Ave., Chicago, Ill. Price, 90 cents per set of four. Special proposition for dealers.

DOW AUTO BODY BRACE.

The ideal of car construction toward which all manufacturers are striving is so to build an automobile as to have all parts act together as one. To a certain extent this is just what the Dow body brace for Ford cars is designed for. The device consists of a main brace made of steel angle, which is clamped to the car frame, crosswise and underneath the running boards. By its use two things are accomplished. The running boards are strengthened and the body is firmly attached to the chassis. In addition, it is said that road shocks are absorbed by it, and squeaks and rattles effectually silenced.

Manufactured by Dow Wire and Iron Works, Inc., Louisville, Ky. Prices and literature upon request.

EXTENSION PEDAL.

One looking for comfort in the automobile will investigate a new device which is being placed on the market which not only adds comfort, but is a convenience, as well as a safety device. It is an actual utility in that it provides a means by which persons of different height can drive the same car without trouble. Two pedal adjustments are provided, a feature which gives quite a welcome relief in touring, as it is possible to rest the feet by changing from one pedal to another. As a matter of safety no short legged driver can afford to be without the device by which a long pedal reach is shortened and the pedals rendered accessible. It does not interfere in any way with the use of the regular pedals. The manufacturers are confident that the device fills a decided want and will be glad to send a pair on trial to be returned in 30 days if not satisfactory.

Manufactured by American Car Accessories Co., 537 West 21st St., New York, N. Y. Price, $5 per pair.

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FISK

Advertising Bulletin for April

The Farm Paper campaign is now on in full blast—34 leading State farm journals covering all sections of the country with full pages and covers in colors. Besides, the great national publication campaign during the month.

SATURDAY EVENING POST	Cover in color
HARPER'S BAZAR	Full page in color
YOUTH'S COMPANION	Cover in color
SUNSET	Full page in color
VOGUE	Full page in color
TOWN & COUNTRY	Back cover in color
COLLIER'S	Cover in color
BOY'S LIFE	Cover in color
AMERICAN BOY	Half page
COLLIER'S	Full page
LIFE	Full page in color
LITERARY DIGEST	Full page

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Write Dept. A for Fisk dealer proposition—get in on Fisk profits

THE FISK RUBBER COMPANY
of N. Y.
Chicopee Falls, Mass.

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Pioneer Dealer Closes His Career

E. A. Gilmore, Long in Business in New England, Originally Traveled for the Rambler Bicycle.

Ernest A. Gilmore, who died at New Rochelle, N. Y., on April 5, 1917, was the eldest son of Mr. and Mrs. A. G. Gilmore and was born in Scranton, Penn., June 21, 1872. He left Scranton in 1895 to travel for Charles S. Smith & Co., Philadelphia agents for the Rambler bicycle, and when the Gormully & Jeffery Co. were absorbed by the American Bicycle Co. Mr. Gilmore was given the southern territory for that company, which he covered until 1901. That year the T. B. Jeffery Co. was formed at Kenosha, Wis., for the manufacture of Rambler automobiles and Mr. Gilmore joined their sales organization and came East, making Boston his headquarters. In 1903 a factory branch was opened under his management, which position he occupied until 1906, resigning in that year to become assistant manager of the New York branch of the White company. A year later he returned to Boston and in partnership with Mr. Charles E. Whitten of Lynn, Mr. Gilmore's first New England customer, the firm of the Whitten-Gilmore Co. was formed to handle Chalmers cars in New England. This connection proved both successful and profitable and terminated early in 1914, when the Chalmers decided to put a branch house into Boston. Mr. Gilmore then went into business for himself under the name of the E. A. Gilmore Co., on Massachusetts avenue, Boston, handling the Lewis and Allen cars. A year later, in the fall of 1915, he closed this business and moved to New York City to become general manager of the Carl H. Page Co., eastern representatives of the Mitchell company, which position he occupied until his death.

Mr. Gilmore was a member of the Church of the New Jerusalem (Swedenborgian) and was educated in the academy of that name. He was from the first an active and willing worker in many movements for better automobile legislation, good roads and all matters pertaining to the motor car industry. He was among the first of the directors of the Boston Automobile Dealers' Association, at one time president of the Bay State Auto Association and of the Beacon Club in Newton, where he resided when in Boston. He was also a member of the Boston Athletic Association, Belmont Springs Country Club, Boston City Club and of the Century Wheelmen of Philadelphia.

Mr. Gilmore in 1906 was married to Louise D. Beerbohm of Chicago, Ill., who survives him, with one son, six years of age. Their first child was the victim of a drowning accident at Waban, Mass., in August, 1915.

On the first Glidden tour from New York to Boston, in the earlier days of motoring, Mr. Gilmore drove the Rambler entry, a single-cylinder runabout, attaining a perfect score among the first to finish.

STUDEBAKER PRESIDENT SAYS OUTLOOK IS BRIGHT.

A. R. Erskine, president of the Studebaker Corporation, is very optimistic concerning the future of all kinds of business. He says: "This is no time for any man to feel pessimistic. The great resources of the United States, its energy and power are being employed in the war, and large expenditures must ensue, which in themselves mean prosperity for our people, in spite of the high prices and increased taxes that will prevail while the war continues.

CHALMERS CAR MAKES NEW STUNT RECORD.

To demonstrate the flexibility of the Chalmers motor and the extreme range of control, as well as the efficiency of the cooling system, a five-passenger touring car was run under A. A. A. sanction for 24 hours in high gear and covered 71.7 miles, an average of 2.9875 miles per hour. L. A. Hillman of Chicago, a member of the A. A. A. contest board, was in charge of the performance, which took place on April 19.

Equipment Service Men Organized

The Equipment Service Association has been formed with the object of preparing and adopting a set of service reports and forms to be used in service stations. The promoters of the association are service managers and representatives of eight manufacturers of electric lighting and starting systems. The first meeting was held at Toledo, O., and the next meeting will be held in Atlantic City, Sept. 11 and 12. The officers are: President, D. W. Burke of the Westinghouse Electric and Manufacturing Co.; secretary and treasurer, R. A. Hall of the Electric Autolite Co. The companies whose representatives have become members of the organization are: Electric Autolite Co., Toledo, O.; Westinghouse Electric and Manufacturing Co., Pittsburg, Penn.; Bijur Motor Lighting Co., Hoboken, N. J.; U. S. Light and Heat Corp., Niagara Falls, N. Y.; Wagner Electric Manufacturing Co., St. Louis, Mo.; Dayton Electric Laboratories Co., Dayton, O.; Gray & Davis, Inc., Boston; A. B. C. Starter Co., Detroit.

WM. H. RANKIN COMPANY SUCCEEDS MAHIN AGENCY.

The name of the Mahin Advertising Co., New York and Chicago, has been changed to the Wm. H. Rankin Co., after the president, William H. Rankin. Wilbur D. Nesbit is vice president of the company and Herman D. Groth secretary and treasurer.

Automotive Electric Association Formed

Automotive Association Is Formed at a Meeting of Manufacturers in Atlantic City.

The Automotive Electric Association was formed at a meeting of manufacturers of electric accessories, held at Atlantic City recently. The objects of the organization include the improvement and development of the business through standardization and friendly exchange of experience with reference to design and manufacture. The next meeting of the association will be held at Hot Springs, Va., May 17, 18 and 19.

The officers of the association are: President, G. Brewer Griffin, Pittsburg, Penn.; vice president, C. O. Mininger, Toledo, O.; secretary, G. S. Cole, Cleveland, O.; treasurer, C. L. Amos, Syracuse, N. Y.

"CALL TO COLORS" FROM RUSSEL AXLE CO.

The Russel Motor Axle Co., Detroit, Mich., has sent out "The Call to Colors" in the form of a patriotic booklet bearing that title and containing Woodrow Wilson's speech to Congress on April 3. An American flag in colors is on the cover and the President's picture is shown opposite the first page, which is captioned, "The President's Plea for a World Democracy."

STERLING MOTORS GET BIG WAR CONTRACT.

The Sterling Motor Co., Brockton, Mass., has received an order from the United States government for 1,000,000 one-pound shells. The daily output will be about 20,000 shells. The company, which has a factory about a mile and a half from the centre of Brockton, has been making shells for the Russian government during the past 18 months.

ON INDUSTRIAL PROBLEM BOARD.

Two representatives of the National Automobile Chamber of Commerce on the National Industrial Conference Board have been named, Charles Clifton, president of the N. A. C. C. and president of the Pierce-Arrow Motor Car Co., and John N. Willys, president of the Willys-Overland Co. of Toledo.

NORMAN BELL JOINS NORMA CO. OF AMERICA.

Norman Bell, formerly sales engineer in the automobile division of the Lukenheimer company of Cincinnati, has joined the Norma Company of America, manufacturers of "Norma" high precision bearings.

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Always Smooth Sailing On Havoline Highway

Havoline Highway is foremost of the world's famous motor trails.

The Havoline-Oiled cars on Havoline Highway run smoother, get longer mileage on gas, and last longer.

Your customers will appreciate your telling them what you know about

HAVOLINE OIL

REG. U.S. PAT. OFF

"It makes a difference"

There's nothing vague, indefinite, or mysterious about this "difference" that Havoline "makes."

Ten dollars spent for a year's supply of Havoline may save hundreds of dollars on a $1000 car in depreciation, repairs, and mileage on gas.

Havoline combats the high cost of upkeep and means bigger cash value when trading-in time comes.

The sealed Havoline can is your customer's guarantee of uniform quality, no waste, no dirt, and full quantity.

Indian Refining Company stations throughout the country insure prompt shipments of all orders.

Indian Refining Company
Incorporated
NEW YORK
Producers, Refiners and Distributors of Petroleum

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William H. Black, Treasurer.
AUTOMOBILE JOURNAL PUB. CO.

Published the 15th of Each Month.

D. O. Black, Jr., Secretary
Times Building, Pawtucket, R. I.

Entered as second class matter, December 30, 1911, at the Postoffice at Pawtucket, R. I., under Act of Congress of March 3, 1879.

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We furnish all parts for all cars and ship them to you promptly—upon receipt of your order. Let us know what you are in need of, our prices will interest you.

Puritan Machine Company
All Parts for All Cars
51 Tenth Street,
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Step-daddy to over 100 Orphan Cars.
Write for our bargain bulletin.

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Bosch Du-4 Variable spark	$30.00
Bosch Du-4 set spark	25.00
Bosch D4 and Dr4	25.00
Bosch D6 and Dr6	30.00
Splitdorf 4 cyl. Dixie, high tension	25.00
Splitdorf 4 cyl., Models A, T, X and D	10.00
National 4 cyl. low tension	8.00
Briggs 4 cyl. low tension	8.00
Remy 4 cyl., type R L	15.00
Simms SU4 high tension	22.00

GENERATORS.

Deaco 6 volt	$12.00
Auto Lite 6 volt	15.00

COILS.

Splitdorf T S type	$10.00
Splitdorf box type	6.00
Bosch type A	12.00
Remy box coils	6.00
Remy type LC and LE	8.00
Briggs box coils	6.00

PREST-O-LITE TANKS.

Model B., fully charged	$8.00
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We REPAIR any make magneto, coil, lighting generator or starter and give 24 hour service. Member Detroit Automobile Trade Association.

Detroit Magneto Exchange
192 Grand River Ave, Detroit, Mich

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Made Equal to New Without Reboring. We will fill your scores with a nickel and silver composition, with our new process. No heating to warp cylinders. Same piston and rings used. Complete information free. Reshipped 24 hours after received. We also sell the outfit to garages. Experience not necessary.

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Write our Sales Department About Your Requirements.

SERVICE GEAR & MACHINE CO.
Reading Pennsylvania

We CONTROL The OIL

No carbon, more power, less fuel. Motor runs like new all the time. No mystery, plain facts, results guaranteed. Write for booklet. Automobile Accessories Co., 816 W. North Ave., Baltimore, Md., or Auto Appliance Co., 301 W. 55th St., New York.

WANTED—A partner to open garage. Must be first class mechanic. A good opportunity. Address 53 East Main St., Johnstown, N. Y.

Debts Collected Quickly! Established 25 years; same address. WM. H. DODD, Dept. D, 87 Nassau St., New York.

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New Hand Made Wrapped Tread Tires

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32x3½	Plain,	$8.50
32x3½	N. S.,	9.50
34x3½	Plain,	10.00
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32x4	N. S.,	11.50
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34x4	Plain,	12.00
34x4	N. S.,	12.50
35x4	Plain,	12.50
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36x4½	N. S.,	18.00
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Mail orders filled day received.

Introductory Offer
Prices Subject to Change

Jandorf Automobile Company

1763 Broadway, NEW YORK

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A Letter of Interest to Makers of Equipment for Ford Cars.

RANDOLPH 3985

Advance Automobile Accessories Corp.

56 EAST RANDOLPH STREET

CHICAGO, ILLINOIS

March 24, 1917

The Accessory and Garage Journal,
441 First National Bank Bldg.,
Chicago, Ill.

ATTENTION MR. DITTMAN

Dear Sir:-

In reference to our conversation-

Your publication is to be complemented on the splendid showing it made during our fall campaign on the MYLE MAYKER and also on the returns from the spring camapign just started.

Of course we used generous space on this big drive but in comparison with some of the others used-you fellows showed up head and shoulders above the rest.

Out of seventeen journals used you were third on the list.

This is the reason we are with you this spring and before the season is over we expect to use you for both of our products.

With kindest personal regards

Yours very truly,

KGC/BB

Kenneth Clark
ADVERTISING MANAGER

Myle Mayker
ADVANCE
FORD TRANSMISSION LININGS

PRINTERS' INK

National Cash Register Discontinues Direct Advertising

President John H. Patterson of the National Cash Register Company, announced to the 700 representatives of the concern in attendance at its recent sales convention that its direct advertising system, which has been in wide use for many years, had been discontinued. Hereafter the company will confine its advertising to trade papers, financial publications and to some extent to newspapers and magazines.

The mailing list of the company, which has been dropped, consisted of 1,600,000 names. The equipment which was used in handling it has been sold. It is reported that the change will make it possible for the concern to reduce somewhat the number of people employed in its advertising department.

Mr. Patterson said that this change in policy had been decided on because it had been found that advertising in the classes of publications mentioned had been effective in the production of sales. In future advertising a strong drive will be made on the merchant, and all good publications reaching him will be considered.

Since the cash register system enables the business man to make more accurate financial statements, the employment of publications going to the banker is regarded as important.

The ACCESSORY & GARAGE JOURNAL is a true trade publication. It reaches, and it is read by all automobile industrial interests in America. The readers are constant buyers. It can be used with equally satisfactory results by all advertisers, from the smallest to the largest, as it has all the qualities of a magazine, a trade mailing list, a trade directory and a buyer's guide. It has 100 per cent. trade circulation all the time, and it covers the interests and activities of the trade in the small towns and villages as closely as those of the largest concerns in all commercial centres.

The ACCESSORY & GARAGE JOURNAL ***Convinced These Advertisers*** through results that it was an extremely productive medium to use. If you build cars, trucks, tractors, trailers, parts, accessories, machinery, tools or fittings, you can exploit your products to all trade buyers, and know to a certainty that you are reaching them.

THE MAY 25 ISSUE IS THE FIRST OF THREE SPRING BUYING AND SELLING EDITIONS

ACCESSORY & GARAGE JOURNAL, Times Building, Pawtucket, R. I.

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PIERCE Governors

For Ford Cars

Owners of Ford trucks, delivery wagons, and taxicabs are learning from experience that fast driving is directly responsible for nearly all of the accidents, and for at least 75 per cent. of the repair bills.

A Pierce Governor, through its automatic and positive control of the vehicle speed, eliminates both damage suits and repair bills, reduces gas and oil consumption, saves tires and springs, and prevents troubles that put cars in the repair shop.

It supplies just the right amount of gas to the motor, permitting the driver to get full power at all speeds up to the danger point, and gradually shuts off the power when that point has been reached. Can be set for any speed.

A HARVEST FOR DEALERS

Some dealer in your city is going to make a lot of money this year selling Pierce Governors. Are you the man?

Write for our proposition. You'll find it interesting.

PIERCE GOVERNOR COMPANY

World's Largest Governor Builders.

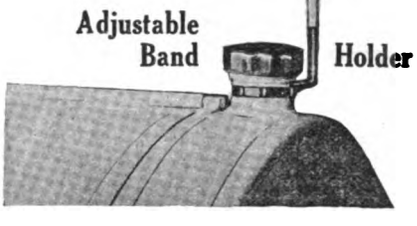
ANDERSON, INDIANA, U.S.A.

Show Your Colors

By Selling the

Shattuck Adjustable Flag Holder

Fits All Pleasure and Commercial Cars



Attached in a few seconds with the fingers. Takes flags with staffs up to and including ¼ inch in diameter. Holder proper can be set and locked on any section of the adjustable band. Finished in gloss black enamel.

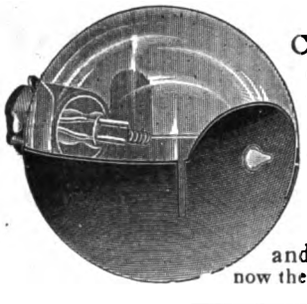
Retail Price 25c To Dealers & Garagemen $7.50 the 100 $7.00 cash with order, charges prepaid

SHATTUCK MFG. CO.

100 Park Place, New York City

If your jobber or dealer won't supply you, write us.

LENNON LIGHT PROTECTOR

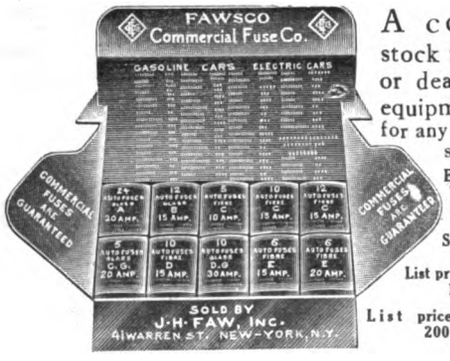


The United States Court of Appeals has affirmed decision of lower courts which upheld the

LENNON PATENTS

The patents, manufacture and sale of this Protector are now the sole property of J. H. Faw, Inc.

FAWSCO FUSE ASSORTMENT



A complete stock for the jobber or dealer, and fuse equipment sufficient for any garage or repair shop.

Economy in Buying
Time Saved
Exact Size Always on Hand
Select the Fuse Wanted

List prices—Assortment No. 1
100 Fuses $11.40

List prices—Assortment No. 2
200 Fuses $21.60

J. H. FAW, Inc.,

41 Warren St., NEW YORK

Manufacturers and Distributors of STANDARD ACCESSORIES
Branch, Atlanta, Ga.

Our Literature on Request

Don't Junk Your Old Bushings!

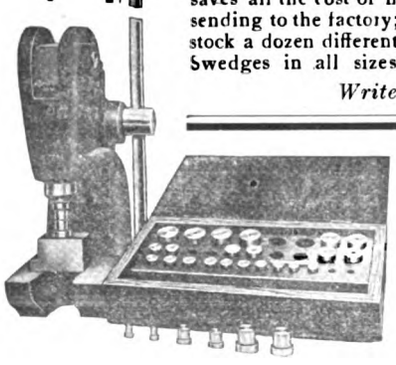
90% of the Bushings that have always been thrown away can be made better than when new. After these bushings have been put through one of our Bushing Presses, the metal is closer-grained and the bushing fits tighter.

BEACH PROCESS BUSHING PRESS

One-fifth of the expense and labor in overhauling a car goes into the bushings! With our Bushing Press you can take a set of six connecting rods, and in less than half an hour swedge and ream them to a perfect fit. These are better than new bushings, which would have cost at least ten dollars—pretty good pay for a half-hour's work! The Beach Bushing Press saves all the cost of new stock; no delay from sending to the factory; no necessity to carry in stock a dozen different size bars of cored bronze. Swedges in all sizes from 7-16" to 1 3-16".

Write us today!

30 Ton Pressure



The GREB COMPANY

202 State Street

BOSTON, MASS.

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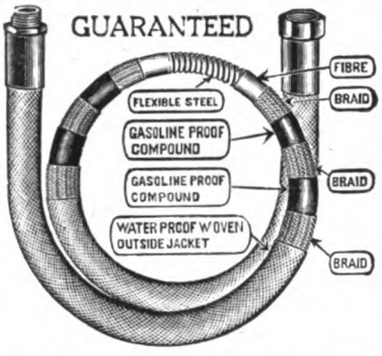
YOU WANT AND NEED EVERLASTING GASOLINE HOSE



Gasoline dissolves rubber and the best rubber hose made will last but a short time. Results—leaks, waste and repairs.

Everlasting Hose is made with a steel core covered with two plys of a gasoline proof compound, covered with a waterproof jacket. It is oil and dirt proof.

It is more flexible than rubber hose, it cannot break or leak and is guaranteed for one year.

There is no rubber to dissolve, to clog the gasoline line or carburetor. In use will not scratch nor mar the finish of the car.

It is made to fit any pump or tank. Sold in standard lengths 8, 10, 12, or 15 feet, but supplied in any length with couplings attached.

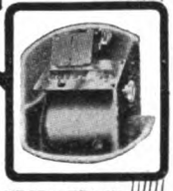
LIST PRICES ¾" $1.00 a ft.—Coupling, hose or I. P. T. $1.50
1¼" $2.00 a ft.—Coupling, hose or I. P. T. $3.00

Anti-drip nozzles furnished when desired.

CHICAGO TUBING AND BRAIDING CO.
224 No. Clinton St. CHICAGO, ILL.

BOWSER
ESTABLISHED 1885

Chief Sentry Gasoline Pump



KEEPS TRACK OF WHAT YOU SELL

Keeps a double check on the gasoline you sell.

Filters and measures accurately five gallons at a stroke.

Prevents spillage and evaporation.

Is high speed and designed to stand the work.

Write for Bulletin today —NOW

S. F. Bowser & Co., Inc.
Fort Wayne, Ind.

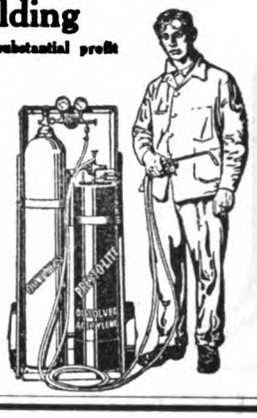
Cut No. 102

Add to Garage Profits by Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profit

PREST-O-LITE

Dissolved Acetylene
(Ready-made carbide gas)



adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for $75.00. (Canada $100.00). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.

The Prest-O-Lite Co., Inc.
The world's Largest Makers of Dissolved Acetylene.
309 Speedway, Indianapolis, Ind.
Canadian General Office, Toronto, Ontario

BEARINGS SERVICE COMPANY
Nation-wide Service on Bearings

New York
Detroit
Chicago
Boston
San Francisco
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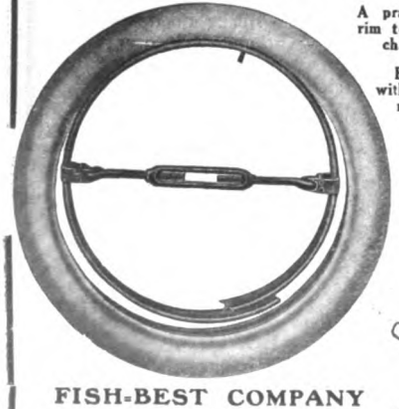
BEST Rim Contractor-Expander



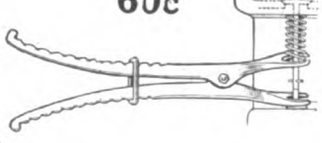
A practical one-operation rim tool that makes tire changing easy.

Every shop, every car with split demountable rims, needs one.

Retail Price **$2.50**

Send for circular, "How to Change Tires," and liberal trade discounts.

Best Valve Lifter
60c



FISH-BEST COMPANY
Grand Rapids, Mich.

FOR 1917
Automobile Mailing Lists

36,931	Auto Dealers, U. S....	$50.00 or $2.50 per M
8,884	Ford Dealers.....	18.50 or 3.00 per M
38,453	Garages	50.00 or 2.50 per M
36,431	Repairs	50.00 or 2.50 per M
45,298	Supplies	60.00 or 2.50 per M
1,136	Auto Supply Jobbers..	4.00 complete list
57,703	Dealers, Garages, Supplies and Repairs in one list, no duplicates	80.00 or $2.50 per M

Have complete list Auto Owners and Ford Owners, $2.00 per M. Further particulars.

TRADE CIRCULAR ADDRESSING CO.
166 West Adams St., Chicago
Franklin 1182

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EFFICIENCY-MEN

·ROAD ····· SHOP ···· FACTORY·

We Use and Recommend

BAY STATE AUTOKIT

GREATEST ECONOMY

of LABOR
TIME
MONEY

Largest measure of convenience, of satisfaction, of car or truck service is expressed by

EFFICIENCY

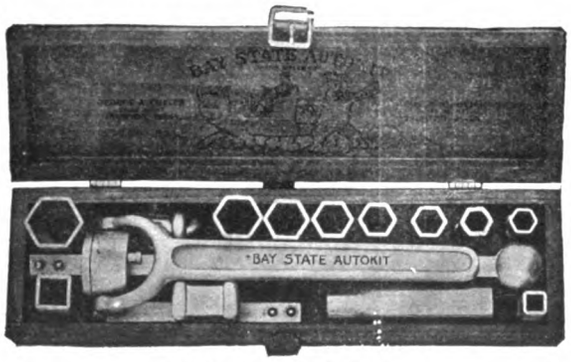
That is obtainable to the fullest degree with the use of

BAY STATE AUTOKIT WRENCH SETS

These are combinations of selected tools for use in the private garage, the public service station, repair or machine shop or that may be carried in the vehicle.

They consist of a series of sockets. socketed shanks and ratchet handles by which any bolt or nut can be easily reached and worked upon with absolute certainty of positive security or release.

There are three combinations:



Bay State Autokit No. 2

Set No. 1—31 Sockets	$10.00
Set No. 2—12 Sockets	7.50
Set No. 3—11 Sockets (Ford Car Outfit)	4.00

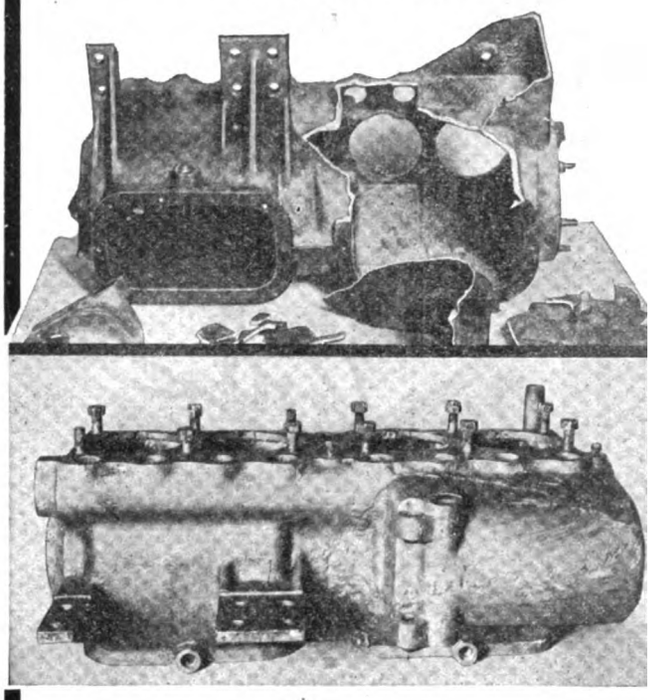
Every Autokit Set is Absolutely Guaranteed
JOBBERS and DEALERS—Send for trade quotations

GEORGE A. CUTTER

Taunton *Sales Agent* Massachusetts

Just Look at Thi

Smash!



THIS is an E. M. F. aluminum crank case, broken by a connecting rod coming loose. See how well it was repaired with an Imperial Oxy-Acetylene welding equipment. After preparing and reheating, it took just 45 minutes to do the welding.

You Can Do Such Work

You can make a handsome *profit* and at the same time add immeasurably to the *prestige and popularity of your garage.*

A letter to us will bring full particulars concerning oxy-acetylene welding and cutting, and how to do it. Also, information on our **LEAD-BURNING OUTFIT** suitable for burning storage battery plates and general custom lead burning. Write the letter ***now.***

Imperial Brass Mfg. Co.

517 So. Racine Ave. CHICAGO, ILL.

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Retail Price $5.00 PER SET

Give Car_____
Model_____
Year_____
When ordering

PEDEX

THE ADJUSTABLE EXTENSION PEDAL

Garages, Service Stations and Accessory Dealers should all carefully consider PEDEX.

1. *A necessity for the family car.*
2. *Insures proper leverage.*
3. *Eliminates driver cushion.*
4. *Rigid when attached.*
5. *Leaves regular pedals clear.*
6. *Adjustable to any length desired*
7. *Attachments to fit all cars.*
8. *Absolute safety.*

Send for Literature, Discounts, Etc.

AMERICAN CAR ACCESSORIES CO.

Dept. S. A. S. Laboratories, Inc. 537 W. 21st St., New York City.

Garford MOTOR TRUCKS

Trucks of 1, 1½. 2, 3½, 5 and 6 ton capacity. 4½, 7 and 10 ton Tractors.
The Garford Road Builder.

THE GARFORD MOTOR TRUCK CO., Lima, Ohio.

Bunting Bearing Bronze IN Cored Bars

Bunting Bearing Metal is standard today with both Manufacturer and Repairman.

Is for sale by most any Jobber or can be purchased direct from us.

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approximate weight
A	1	½	12	2
B	1¼	½	12	3½
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11¼
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	30

The Bunting Brass & Bronze Co.

727 Spencer Street Toledo, Ohio

FORD TYPE
$18 Set of Four
With Rings and Pins.
STOCK PATTERNS FOR CHALMERS, WHITE, REO and Others.

DODGE TYPE
$20 Set of Four
With Rings Only

Featherweight LIGHTER THAN ALUMINUM Pistons

Will Put "PEP" Into That Sluggish Motor.

Being one-third as heavy as the cast iron cannon ball type, they *increase* power and speed and *reduce* vibration, carbon deposit and wear on bearings, and *save* fuel.

Dealers Write Today For Discounts

FEATHERWEIGHT PISTON CO.

WEIGHT

11 Guyman Way.
Pittsburgh, Pa.

One-Piece Suits and Driving Hoods

We Letter Your Suits

In a very attractive manner with Turkish red thread (which positively does not fade), the name of the Car, Tire or Oil that you handle, or in any other way you choose, at a very small additional cost.

We make a specialty of Racing Suits and Hoods

SANDERS CO.

218½ Indiana Ave.
INDIANAPOLIS, - IND.

Price $2.50 up. Made of heavy government khaki. Let us send you samples.

Price $1.50 up
Made of khaki, wools, serges and leather.

SELL SULLIVAN TRUCKS

One of the few staple and practical trucks on the market.

Our selling policy and proposition is the most liberal ever offered to the trade.

One Model, 3,000 Lbs. Capacity
Chassis Price, $1,600

Write for complete details

SULLIVAN MOTOR CAR CO.
Rochester, New York

Subscribe to

THE ACCESSORY AND GARAGE JOURNAL

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Times Building Pawtucket, R. I.

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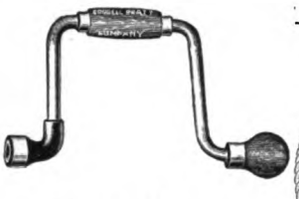
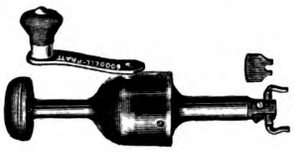
GOODELL-PRATT
1500 GOOD TOOLS



Rim Wrenches

Feeler Gauges



Valve Grinders

Bearing Scrapers

Brass Hammers	Hand Drills
Calipers	Pin Punches
Circular Glass Cutters	Screw Drivers
Combination Pliers	Screw Pitch Gauges
Hack Saws	Washer Cutters

and hundreds of other good tools are shown in this new catalog.

It is free, if you write now.

Goodell-Pratt Company

Toolsmiths

Greenfield, Mass., U. S. A.

432 PAGES 1500 TOOLS

Out of the way with one movement of the hand!

$150

A Price any Ford Owner can afford

—is the main reason why the two million Ford car drivers are live prospects for the

WARNER
GEAR COMPANY OF MUNCIE

WHEELTILT
FOR FORD CARS

The obstacle of high price has been removed. The Warner "wheeltilt" banishes forever all squeezing and twisting thru the narrow slit between the steering wheel and the seat.

A slight pull on the latch tilts the wheel out of the way. Installed in five minutes by any one who can use a wrench.

Get your share of the two million prospects for this big self seller—this national demand. Write today for our very interesting agency offer.

Illustrated booklet on request.

Warner Gear Co.
1800 CLERK STREET
Muncie, Ind.

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PAUL G. NIEHOFF & CO.

"CASH" REGISTER of CONTACT PARTS

Mr. Dealer-

This is "A Case of Good Business." WHY?

Because: It opens up a new field for you in the merchandising of contact parts for which there is an ever increasing demand.

Because: It keeps those valuable parts systematized so you know just where to find them, instead of scattered all over the shop.

The Niehoff "Cash Register" is a real necessity and can only be appreciated after you have put it into service. Delivered prepaid with an assortment of contacts such as will fit all standard cars or others, as you specify.

Write today for FREE illustrated booklet on contact parts and full information in starter and generator brush equipment -- most comprehensive and up-to-date.

PAUL G. NIEHOFF & COMPANY, Inc., Dept. A
Metallurgical Laboratories - Chicago, Illinois

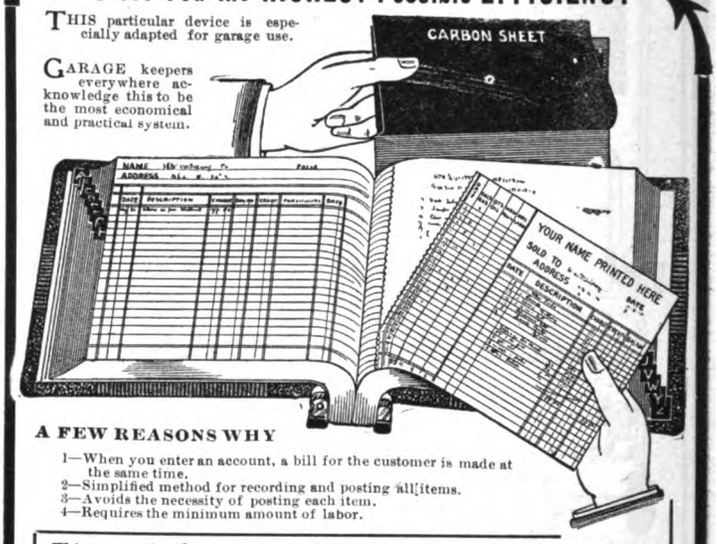
Ask your jobber about it

SAVE TIME AND MONEY

Our SPECIAL GARAGE Bookkeeping Plan Gives You the HIGHEST Possible EFFICIENCY

THIS particular device is especially adapted for garage use.

GARAGE keepers everywhere acknowledge this to be the most economical and practical system.



A FEW REASONS WHY

1—When you enter an account, a bill for the customer is made at the same time.
2—Simplified method for recording and posting all items.
3—Avoids the necessity of posting each item.
4—Requires the minimum amount of labor.

This page is the customer's bill; the one underneath is your copy

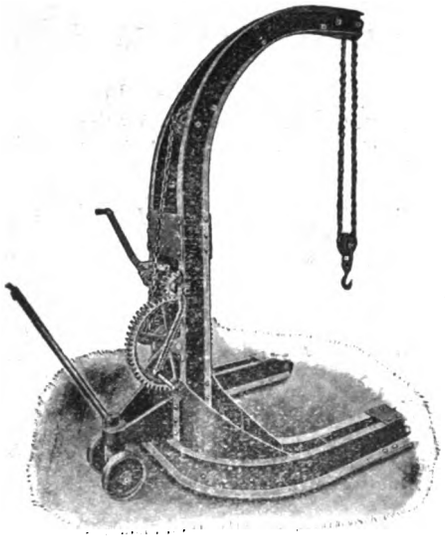
Harton's Garage and Accounting Record is another new labor saving device we make. Ask about it.

SEND FOR DESCRIPTIVE FOLDER AND FULL PARTICULARS

Let Our Service Department Solve Your Bookkeeping Problem. We Gladly Give Advice Free.

THOMAS J. HARTON & CO., Inc. Church & Worth Sts. NEW YORK

Loose Leaf Specialists



SAFETY FIRST

The "Lafayette" Portable Steel Crane

Made of steel—it will not break. Double locked with load. Safe. Low base. Ample power. Roller bearings. No garage or repair shop can afford to be without them. A complete hoisting and conveying machine.

STANDARD SIZES

No.	Height	Overhang	Capacity	Ht. of Base	Weight	List
6	8'-6"	3'-6"	5000 lbs.	8 inches	900 lbs.	$100.00
5	7'-6"	3'-0"	4000 lbs.	7 inches	700 lbs.	$85.00
4	6'-0"	2'-6"	3000 lbs.	6 inches	500 lbs.	$70.00

For Sale by Jobbers Everywhere or Write

The LaFayette Engineering Co., Mfgr's, LaFayette, Indiana

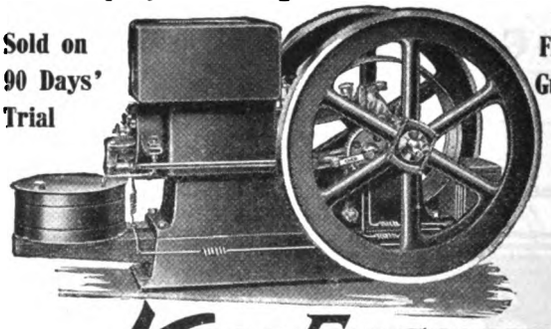
MAKE BIG MONEY

Selling "MECO" Engines

Demand Rapidly Increasing — Farmers Need More Power

Sold on 90 Days' Trial

Five-Year Guarantee



MECO ENGINES

Gasoline, Kerosene & Gas

Kerosene Engines are big money makers for jobbers and dealers. Best Prices and Best Terms—Thousands being sold. MECO Kerosene Engine cuts fuel cost 65 per cent as compared to gasoline.

We Please You or Refund Your Money.

Ask for our special agency offer and latest MECO prices. Sizes 2, 3, 4, 6, 8 and 12 H-P.—Stationary, Portable or Saw-Rig styles—magneto or battery ignition.

If your jobber does not handle MECO Engines, write us direct. Don't wait for the other fellow—Cinch the trade NOW. Write to-day.

MANUFACTURERS ENGINE CO.

1899 Crystal Ave., Kansas City, Mo.

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BRACES BODY RUNNING BOARD and FENDERS

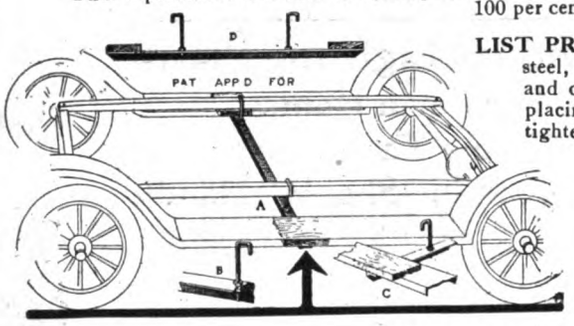
Dow Body Brace for FORD CARS

Why Jobbers and Dealers Sell It

They know its value and practicality; that it maintains the running boards level, whether light or loaded, on rough or bad roads, and insures the relation of the fenders and shields.

That it absorbs road shock, and holds the body firmly to the chassis, so that Ford cars ride as easily as larger machines.

That it prevents noise and rattle, keeps the chassis in alignment, and adds from 50 to 100 per cent. to its service life.



LIST PRICE $3. It is built of heavy angle steel, weighs 12 pounds, is sold complete, and can be attached in five minutes by placing the clamps on the frame and tightening the wooden shock absorbers under the running boards. No holes are drilled.

JOBBERS AND DEALERS

The Dow Body Brace is a quick and constant seller. Hundreds are bought daily by Ford car owners.

Write today for Catalogue describing this and other Ford car specialties, and trade quotations. There's big profits awaiting you.

DOW WIRE & IRON WORKS, *Inc.*

LOUISVILLE :: :: KENTUCKY

COMPARE

SPRING NUT LOCKS

Stamped in a single piece from sheet steel, bent and tempered.

Slips easily on over the bolt, straddling a single thread.

Fits the widest variations in pitch of thread on bolts of same diameter.

Used on any style, design or manufacture of bolt and nut.

Tightened with a slight turn of the same wrench which is used to tighten nut against material.

Bottom disc or leg presses against nut; upper disc flattens down against bottom leg, bringing into play the powerful spring in the bend or hinge—a double hold.

Each leg draws deep into the valley of threads on opposite sides of bolt—a double grip.

Further tightening of nut against material is followed by lower leg of lock to the extent of the spring.

Uses least length of bolt.

Fits practically flush with end of bolt.

Instantly released with wrench used on nut.

Usable over and over again as well as nut and bolt.

WITH

Upper cut shows Spring Nut Lock applied loose on bolt. Lower cut shows Lock tightened against bolt.

Double Nuts or Any Other Nut Locking Device

No threads to be cut; no complicated parts to fit in making.

No crossing of threads or difficult fittings on under- or over-size bolts when used.

No assortment of locks needed each for a different thread.

No changing to unknown makes of bolt or nut.

No special tools needed in applying.

Cannot distort or jam thread of bolt.

No pawls to jam, break, rust or get out of order.

Possible shrinkage of the material bolted together cannot release lock.

Practically no extra length of bolt to pay for.

No nuts sticking out to complicate designs of machines or catch and get in the way.

No locking device to pick out when nut is to be taken off.

Then TEST Spring Nut Locks

for Simplicity, Economy, Durability and Efficiency on Automobiles, Trucks, Batteries, Accessories or wherever nuts must Hold

"They Sell Themselves"

Samples and Discounts on Application to

Spring Nut Lock Co., 651 Transportation Bldg., Chicago

Resta

Rickenbacher

Aitken

Indisputable Evidence

Of the 41 drivers that figured in the 1916 Trophy awards, 40 used

DIXON'S GRAPHITE Automobile LUBRICANTS

These drivers required and demanded the lubricants which would give their cars maximum speed, reliability and protection.

They chose Dixon's—naturally.

You owe your car the same intelligent care. The first step in this direction is to send for "Words of Wisdom" and Booklet 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Co.,

Established 1827

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The elapsed time recorder

Garage Men You Will Sell More Cars

If you eliminate the dispute over repair charges.

Satisfaction with maintenance and repairs will insure a new order for the same make of car.

Calculagraph elapsed time records of repair jobs cannot be disputed.

Elapsed time is what you buy from your workmen and sell to your customers. It should be accurately measured.

One Calculagraph will print the starting and finishing time and compute and print the elapsed time for all your workmen.

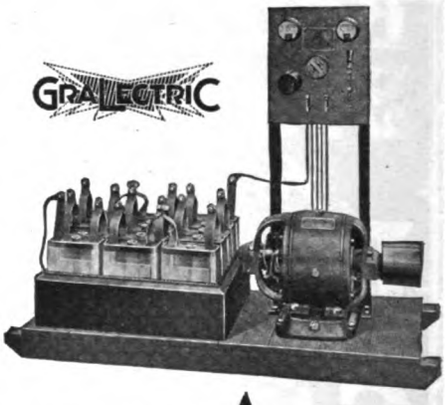
Send for free booklet W, illustrating a complete set of forms for a simple cost system for garages.

CALCULAGRAPH COMPANY

Dept. 76, 30 Church Street New York City

$225.00

Individual Lighting Plants For Farm Homes A Line That Every Garage Man Should Handle



Plant consists of generator, switchboard and storage battery assembled complete and mounted on skids. Batteries are fully charged before shipment and customer can have light immediately after uncrating. No wiring to be done on plant—simply connect two wires from house wiring to back of switchboard.

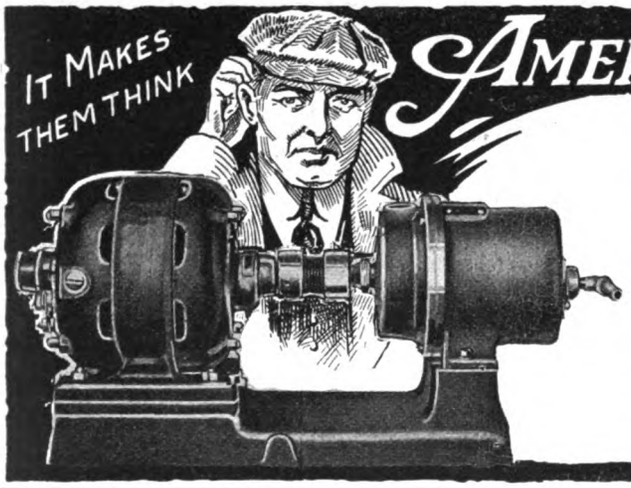
Batteries guaranteed for five years.

The farmer uses his work engine to charge the storage batteries, which give him all the current he needs to light his house and barn for a week or more on one charge. Very inexpensive to maintain and can be taken care of by a boy or the hired girl.

This is a permanent, profitable business for every garageman and dealer in the country districts.

Write for special proposition to Garage Men.

GRAY MOTOR CO., - - - - 435 Oakland Ave., Detroit, Mich.



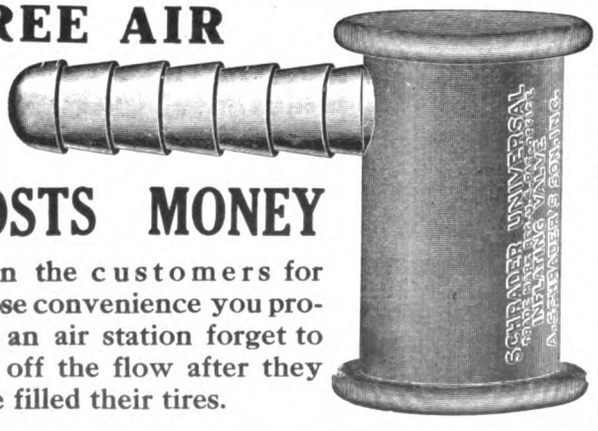
AMERICAN ELECTRIC AIR PUMP

EMPLOYING the **ROTARY** principle, the American Electric has these distinct advantages: It is the most compact, simple, durable, economical and efficient air pump made. It can be placed anywhere. Supplies air direct to the tires or can be coupled with a storage tank. Driven by direct or alternating current. Automatic lubrication. Dust and dirt proof. No packing used. Fully guaranteed.

JOBBERS and DEALERS—We are offering special inducements to the trade. You can sell the American Electric and can swing the pump business in your territory. A proposition that once sold stays sold.

AMERICAN ELECTRIC AIR PUMP CO., 222 Penn Ave. PITTSBURGH, PA.

FREE AIR



COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Automatic Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from 1-4 in. to 5-8 in.

PRICE ONE DOLLAR

in U. S. A.

Manufactured by

A. SCHRADER'S SON, Inc.

800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a reason."

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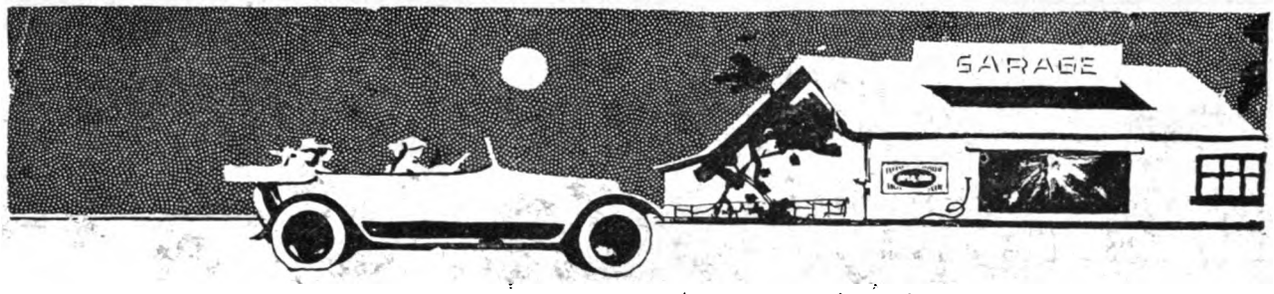

No Matter at What Time of the Night The Brunnerwise Motorist Comes Limping Along The Road With a Big Rear Tire Flat, He Knows When He Sees The Brunner Sign That His Trouble Is Over

It is a mighty nice thing to know that you are in position to take care of the motorist at any time of the day or night Mr. Garageman, and if your compressed air plant is a Brunner you know that the Brunnerwise Motorist has played no small part in the building up of your business since you have installed [redacted] service in your garage and displayed the [redacted] sign on your garage.

Efficiency is what counts in the modern garage, and with the Brunnerwise Motorist the efficiency of your garage starts at the end of your air hose, if he sees the [redacted] sign on your garage the question of efficiency is settled then and there because he has always found prompt and efficient service under the [redacted] sign.

The average motorist is looking for efficient service and if he pulls up in front of your garage, picks up the air hose and finds only a weak wheezy puff of stale air available, it instills in his mind grave doubt as to the general efficiency of your garage and he passes on. Start at the end of your air hose Mr. Garageman and improve the efficiency of your garage.

Investigate the BRUNNER *Air Compressor*

Mr. Garageman the selection of your air compressor equipment is a matter that you should give your very careful attention. Before making your selection you should read Brunner's Garageman's Handbook on Compressed Air and get the facts concerning the Garage Air Compressor situation today. This book, with our No. 14 catalogue and the name of the Brunner Jobber covering your territory will be mailed to you upon request.

The Brunnerwise Motorist

BRUNNER MANUFACTURING COMPANY

Main Office and Plant
UTICA, NEW YORK

Cincinnati Branch
CINCINNATI, OHIO

The Brunnerwise Garageman

WITH PUMP AND MOTOR IN BASE
$105.00
WITHOUT PUMP AND MOTOR
$45.00

LIPMAN GARAGE PUMPS

PORTABLE STATIONARY

A Pump for Every PURSE and Every PURPOSE

FREE AIR SERVICE CURB STANDS

Most complete line made.
Most Economical to buy.
Most Economical to operate.

NEW CATALOG READY

Buy Direct. Save Money.

LIPMAN AIR APPLIANCE CO.
199 Pleasant St., BELOIT, WIS.

50

60

Demountable at $1.00 A Wheel

Use Wooden Wheels Now on the Car and These New Bolts

Draw Trade Your Way

Be first in your locality to get this proposition—just what the small car owner is looking for. It means fear of punctures, blowouts and broken wheels banished forever. The HOLLAND LIGHTNING DEMOUNTABLE WHEEL OUTFIT does it. Once installed, wheel changes can be made by merely loosening six nuts. Changes made in three minutes—no soiled hands or clothing, no matter how dirty tires may be.

Simple installation—use the wooden wheels now on car and replace old bolts and nuts with our special equipment.

The HOLLAND *Lightning Demountable Wheel* OUTFIT

PATENT APPLIED FOR

For Fords and 490 Chevrolets

(Only Outfit That Makes Wheels on 490 Chevrolets Demountable)

Customers' price only $4.00 East of the Rockies; $4.50 West—for complete outfit. Liberal arrangements made with dealers who write quick. Dealers make profit on outfit, sell the spare wheel, extra casing, inner tube, tire carrier and cover at retail prices.

The Holland Demountable Wheel Outfit will attract and build big business for you. Money Back Guarantee—full instructions for installing and free wrench with each outfit.

Send This Coupon NOW— Attached to Your Letterhead

HOLLAND DEMOUNTABLE WHEEL CO.,
Dept. 9 Holland, Mich.

Please send me your liberal proposition on the Holland Lightning Demountable Wheel Outfit.

Name.....

Address.....

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Engineers and engine builders acknowledge that the **EVER-TIGHT** three-piece construction is the only proper construction for safety and prevention of leakage. Makes reboring of out-of-round cylinders absolutely unnecessary. Write us.

Ever-Tight Piston Ring Co., 1423 Chestnut Street Saint Louis, Missouri

DO TIRE REPAIRING-

as a separate business department of your Garage. Business easy to get, grows steadily, and pays well; only small capital required and opportunity everywhere. For best work and surest profits use

Akron-Williams

TIRE REPAIR EQUIPMENT

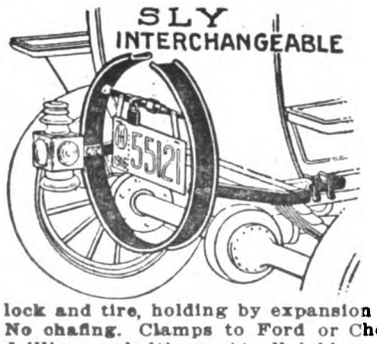
Used and recommended by 60 Leading Tire Companies

Send for booklet No. 12 and catalogue on complete outfits for every size garage.

THE WILLIAMS FOUNDRY & MACHINE CO.
Ash Street, Akron, Ohio

HESS-BRIGHT
BALL BEARINGS

"THE INIMITABLE BEARING"
DISTRIBUTORS IN EVERY CITY OF IMPORTANCE
HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA, PENNSYLVANIA, U.S.A.



SLY Interchangeable and Cradle Type TIRE HOLDERS

Interchangeables quickly adjustable for all Ford and Chevrolet tires and demountable rims. Combines place for lamp, number plate lock and tire, holding by expansion grip on inside of tire. No chafing. Clamps to Ford or Chevrolet frame without drilling or bolting. At all jobbers, or write

New Era Spring & Specialty Co.
865-A Woodward Ave. Detroit, Mich.

THE MINIMUM IN DELIVERY COST

TON-A-FORD

(Trade Mark—Foreign Rights Reserved)

Extension Chassis, $345

F. O. B. RACINE

Combined with a Ford Chassis (new or old) makes a Powerful Ton-Truck, with Ton-and-a-Half capacity.

Dealers: Write for specifications and our agency proposition

TON-A-FORD TRUCK CO. 15th St., RACINE, WIS.

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The Apperson "family" of car owners proves the character of Apperson workmanship.

The remarkable tendency of Apperson enthusiasts never to sell except to buy another Apperson has given rise to the phrase, "Once an Apperson Owner Always an Apperson Owner."

Have your dealer tell you why.

Sixes and Eights

APPERSON BROTHERS AUTOMOBILE CO.
308 Main Street Kokomo, Indiana

APPERSON

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

CAUTION

Do not confuse Scaife Copper-Brazed Tanks with the cheap Welded or Soft-Soldered Tanks made by others.

We Also Manufacture
SCAIFE GASOLINE STORAGE OUTFITS

Send for Catalogues.

WM. B. SCAIFE & SONS CO.,
First National Bank Bldg. PITTSBURGH, PA.

"NORMA" BALL BEARINGS

(Patented)

Dependability—isn't that the really essential quality in any car? Isn't dependability—so far as car performance is concerned—synonymous with pleasure-capacity and service-capacity? And doesn't dependability in the car as a whole demand dependability in every detail of construction and equipment? The ignition apparatus and lighting generator, for instance?

"NORMA" Bearings are the standard bearings in the high-grade magnetos and lighting generators used on cars of the better class and adopted because of their proved dependability. It is, then, a mere statement of fact to say that "NORMA" Bearings identify dependable magnetos and lighting generators.

Be Sure. See that Your Electrical Accessories Are "NORMA" Equipped.

THE NORMA COMPANY OF AMERICA

1790 BROADWAY NEW YORK

Ball, Roller, Thrust, Combination Bearings.

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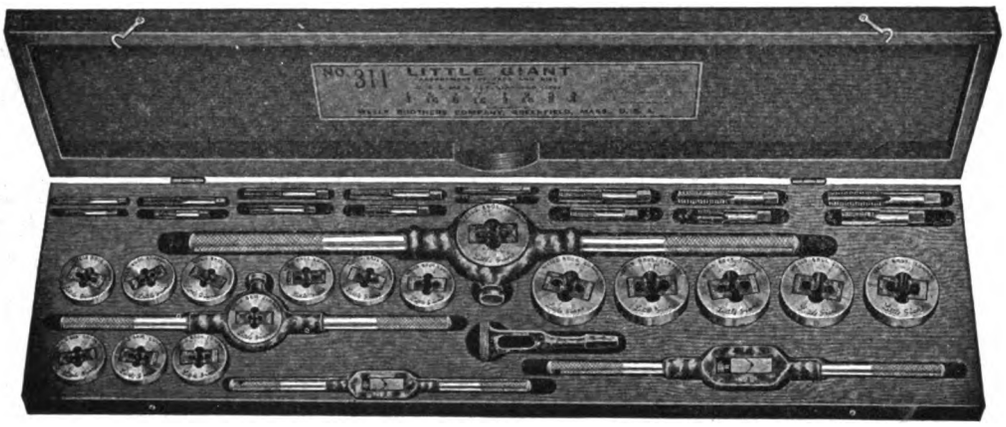
Little Giant Combination Screw Plates

Both United States and S. A. E. Standards



These assortments are particularly valuable in the automobile repair shop where a considerable amount of threading is done. Each die is contained in its own collet and is adjusted to size. There is also a Bit Brace Die Holder for cleaning up battered threads in hard-to-get-at-places.

Every need of the manufacturer, the garage and repair man, or the car owner who makes his own repairs, for tap and die assortments can be supplied from our big line.

Send to-day for the circulars "Tools for the Automobile" "First aid in the up-keep of the Automobile."

Greenfield Tap and Die Corporation, Greenfield, Mass.

New York Chicago Philadelphia Galt, Ontario

PERFECT IGNITION

By Keeping Contact Points Clean

IGNETO PLATINUM FILES

For cleaning contact points on Spark Coils, Circuit Breaker Parts, Spark Plugs and Magnetos.

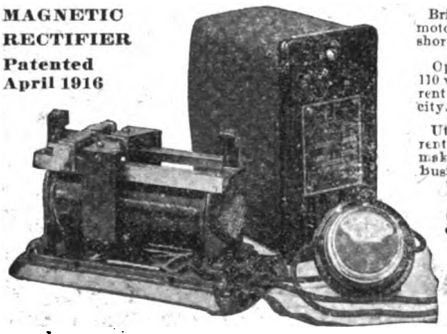
These extremely fine and uniformly cut files remove only the slightest film of platinum.

List at 25c each
Discounts from your jobber

STEVENS & COMPANY
375 Broadway New York City

F-F BATTERY BOOSTER

MAGNETIC RECTIFIER
Patented April 1916



Brings up the gravity of motor car storage batteries in the shortest possible time.

Operates from any convenient 110 volt 60 cycle alternating current lamp socket. 60 watt capacity.

Utilizes the Full Wave of current, has carbon electrodes and makes Recharging a profitable business where batteries are taken in to charge.

$15 Complete

f. o. b. Cleveland

Get Bulletin No. 8

THE FRANCE MANUFACTURING CO., Cleveland, Ohio.
Jobbers and Dealers Throughout the United States and Canada.

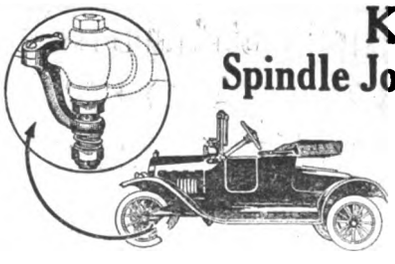
WE REPAIR

BUY, SELL AND EXCHANGE

Coils, Magnetos, Starting and Lighting Systems, High Tension Outfits and Motors

We Repair any Kind of an Electrical Heating Device

MABEY ELECTRIC & MFG. CO.
968 Fort Wayne Ave., Indianapolis, Ind.



KING
Spindle Joint Anti-Rattler
Ford Cars

$1.00 PER PAIR

Silences the spindles and stops the dangerous wear. It stops the hammering, keeps out the dirt, reduces wear and saves repair bills. It is a simple device and can be attached by any one. After that it needs no attention.

King Manufacturing Company, Inc.
305 Washington Street, Brookline, Mass.

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The Shotwell Method of Handling Hazardous Liquids

Standard of Accuracy

KNOW that there is absolutely no waste; be sure of the accuracy and economy of your filling system; see that it's Shotwell. You will find in this new system distinct advantages over all other methods. Does away entirely with the old rack and pinion. Accuracy of measurement absolutely assured. Large contact surfaces completely enclosed and protected from dust. Volume can neither be increased nor decreased through negligence or design.

Storage systems and pumps for public garages, private garages, stores, factories, railroad, etc.; all embodying the features that make the Shotwell the standard of accuracy; never more, never less.

Located directly *above* the tank; not inside. Easy to get at through cast iron man-hole box which is part of equipment. Makes it easy to clean valves and intake screen; does away with old, troublesome and expensive method. An exclusive Shotwell feature.

Let Us Tell You More of The Shotwell Method

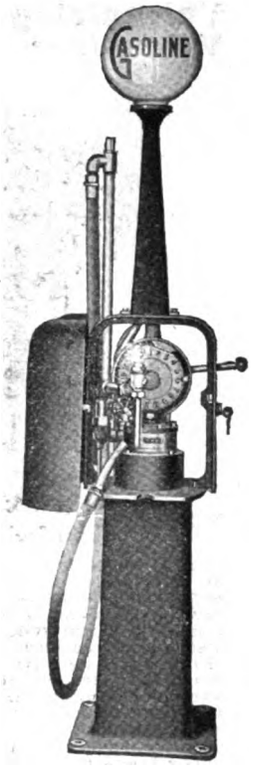
We will be glad to go into this proposition in detail; to point out to you where Shotwell surpasses and tell you why it is the system for you.

Write for Catalogue. Prompt Deliveries.

Shotwell Pump and Tank Company

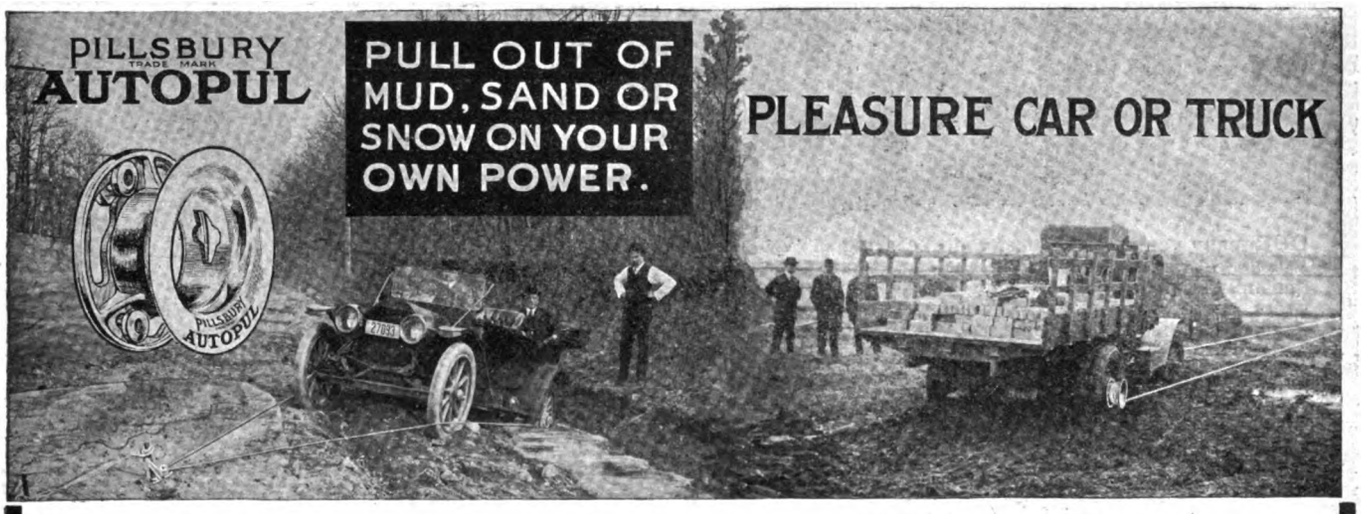
27 North Alabama Street

INDIANAPOLIS, INDIANA



THE SCOUT

This is the pump that should stand in front of your place as a symbol of accuracy.



All Highways are Passable—With a PILLSBURY AUTOPUL

An equipment, either permanent or quickly fitted to any car or truck, with which a ditched or bogged or traction-less vehicle can be drawn to a solid surface.
The outfit can be carried constantly, requires but small space and is very light. Machines can be drawn forward or back as is necessary by their own power.

LIST PRICE, COMPLETE FITTINGS

Automobile Size, Japanned	$8
Automobile Size, Nickeled	$13
Truck Size, Japanned	$8 to $35

Indispensable for any truck, an ideal touring equipment, PILLSBURY AUTOPUL is a practical utility and an economy.
It consists of two winding drums, two special cable hooks and locking bolts and nuts. Stakes and cable furnished as extras, the cable or rope in lengths to meet any requirement.

PILLSBURY HUBPUL For Ford and model 490 Chevrolet cars—a combination Hup-Cap, Wheel Puller and Auto Capstan, consisting of two hub drums, two spoke hooks and wheel puller cap screw.

Complete Set, Japanned	$4
Complete Set, Nickeled	$6

All quotations f. o. b. Minneapolis, Minn.

DEALERS AND JOBBERS: We have a big sales proposition for you. Write for it today.

PILLSBURY MANUFACTURING COMPANY, Minneapolis, Minn.

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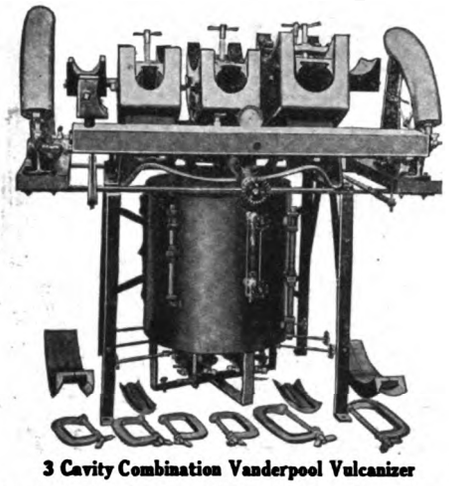
Vulcanizing With a Vanderpool Vulcanizer Brings Big Profits



3 Cavity Combination Vanderpool Vulcanizer

Here is an exceptional opportunity for Garages as well as Vulcanizing Companies to secure a vulcanizer that will turn out high-grade work at a small cost. The fuel saved alone, will pay for the machine in a short time—then you will "cash in" on your investment. This plant, the Vanderpool Vulcanizer, is meeting with enthusiastic approval of hundreds of satisfied users all over the country. Unsolicited testimonials from the various companies now using the "Vanderpool" testify to the dependability, efficiency and economy of this "Vulcanizing Wonder." One man writes that the first month's profits paid for the plant. No experience needed—we teach you how. It occupies very little floor space, and "once bought, you will never have to buy again."

Send in this ad with your name and we will mail catalogue and prices.

VANDERPOOL COMPANY

Box 63 **SPRINGFIELD, OHIO**

SOLD ONLY TO THE TRADE

THE MARTIN LINE

Tire Covers, Radiator Robes, Inner Tube Cases, Water Buckets, Engine Robes

All jobbers and dealers should send a sample order. Do it before you stock your 1917 line. **Quality, prices and discounts are not met by any other manufacturer.**

No catalogue is complete unless the Martin Line is shown and listed

Send today for latest circulars and discount sheets.

THE MARTIN MANUFACTURING CO.

LANCASTER, OHIO

Jointless Piston Rings

There are no substitutes for Jointless Piston Rings. The Jointless affords every quality found in other rings and assures to all users a permanent, gas tight ring, more power, less carbon, increased mileage, less gasoline and lubricating oil.

The Jointless eliminates all usual piston ring troubles. It is finely constructed and its efficiency makes the Jointless a money making and saving proposition for any owner of a pleasure car or truck.

List Price $1.00

Sold by all Jobbers and Dealers.

DETROIT PISTON RING CO.

53 Richmond Ave. **Detroit, Mich.**

Get this display rack FREE

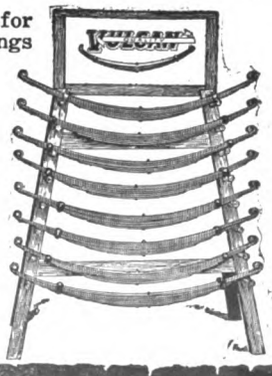
OUR many years experience manufacturing Vulcan Springs is reflected in the high quality and universal satisfaction they give dealers and users. Exact duplicates to fit any standard make quickly supplied by the nearest of our five branches.

Be sure the "Vulcan" trade mark is on the main leaf of every spring you buy. It is your guarantee of spring satisfaction.

"Vulcan Springs for Every Car".

VULCAN QUALITY

Special Offer.—With orders for one dozen or more Vulcan Springs we will give *absolutely free*, one of these handsome display racks. Send for latest price list and best trade discounts.



Jenkins Vulcan Spring Co.
1412 Chestnut St.,
St. Louis, Mo.

BRANCH STORES AT

29 Caldwell St. Sumter, S. C. 708 Commerce St. Ft. Worth, Texas.
1024 Hennepin St. Minneapolis, Minn. 538 Franklin St. Reading, Pa.

WATERHOUSE

WELDING OUTFITS $42

The Standard Welding Equipment of the Nation

Before you buy any welding outfit learn about the Waterhouse. In any shop it will bring business and big profits.

Write for our welding instruction book, free at request.

WATERHOUSE WELDING CO.

3 Pelham Street, Boston, Mass.

With the "Tonford" unit, any Ford old or new can be made into a one-ton truck. You can run it with but very slight increase in cost of operation as compared with the pleasure car. Its ability to take care of many more deliveries with the same cost of upkeep will quickly make it pay for itself.

Tonford
TRADE MARK

$325 f. o. b. Detroit
56 and 64 inch treads

DETROIT TRUCK COMPANY
Detroit, U. S. A.

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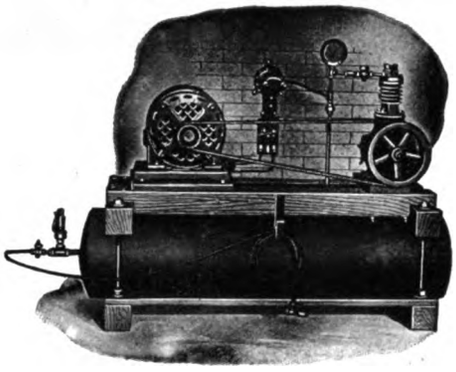
GARDNER
STATIONARY FREE AIR UNIT



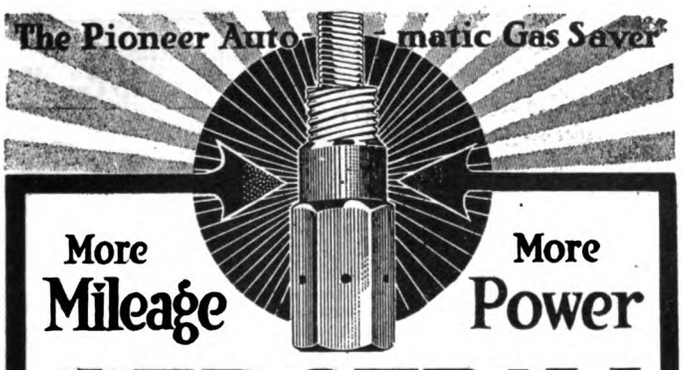
FOR

SERVICE ECONOMY DEPENDABILITY

A Gardner Outfit of this type installed in *your* garage would mean air in large quantities at all times at exactly the right pressure. It would mean economy for you and better service to your customers.

THE GARDNER GOVERNOR COMPANY
126 Williamson St., Quincy, Ill.

Singer Bldg, New York City — Fisher Bldg, Chicago — 5 First St., San Francisco



More Mileage — More Power

AEROFRAM
Gas Saver

The Simplest and Most Efficient of All Gas-Saving Devices—Effects a Notable Improvement in Engine Performance—Anybody Can Install It in Ten Minutes—For All Cars.

Absolutely Automatic—Nothing to Adjust

Dealers: The Aerofram actually does the work that more expensive gas-savers claim to do. When you offer it to your customer you do so with the certainty that he cannot duplicate its efficiency with any other device at ten times the price. It will positively add two to six miles per gallon—in many cases more. Hundreds of users have testified to this. Write for details. Liberal selling terms.

Price in Canada $1.50

$1 **The Aerofram Co.** $1

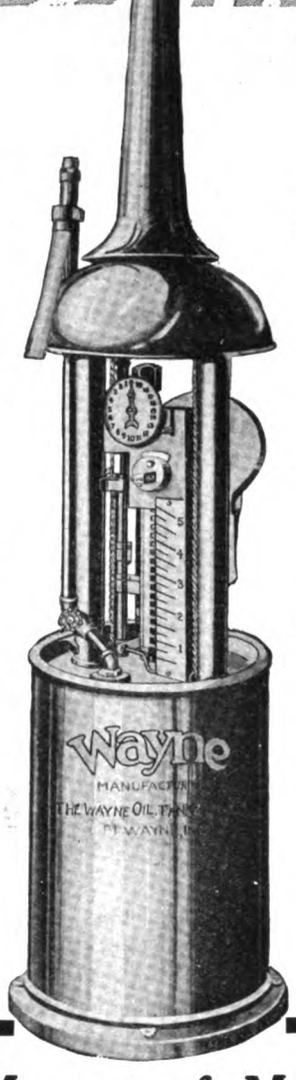
107 Massachusetts Avenue. Boston, Mass.

CONTINUOUS STROKE
No backward cranking.

SPEED,
20 gallons a minute.

BIG CLOCK DIAL
shows number gallons discharged.

PERFECT METER
positive drive operated by cog rack — sure — accurate.



CIRCULAR STEEL HOUSING
Weatherproof—doors telescope—counterbalanced.

SOLID BRASS VALVES
throughout.

CASTINGS,
all gray iron. All parts that come in contact with gasoline are galvanized.

The Magnet of Motordom

This big, handsome, WAYNE MONARCH the magnet of motordom—at your curb will hold the trade you now enjoy and draw to your garage a full quota of the trade that now goes elsewhere, for there are thousands of motorists today who will buy "gas" from no other than

Wayne
Honest Measure Pumps

Wise dealers everywhere are rapidly installing these trade-holding, sales increasing, profit-multiplying outfits.

A post card addressed to us will bring you interesting descriptive literature and details. You'll find it worth while to get them. Write now.

WAYNE OIL TANK AND PUMP CO.
510 Canal Street, Fort Wayne, Ind.

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MOSCO

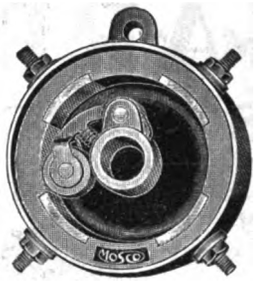
FLOATING PLUNGER WHEEL PULLER

Makes a "Frozen" or "Stuck" wheel come off easily. Strike the plunger, turn the screw, strike again and the wheel comes off without injury to hub-threads, spokes or axle.

Car	Model	W. P. No.
Abbott	6-44	16
Apperson	6-17, 8-17	20
Auburn	6-39, 6-44	5
Briscoe	4-24	16
Buick	10, 24, 25, 26, 27, 32, 33, 34, 35, 36, B24, B25, C24, C25	4
Buick	16, 17, 19, 21, 28, 29, 30, 31, 41, B36, B37, B38, C36, C37	5
Buick	D35	14
Buick	D44, D45, D46, D47	20
Case	4-T	4
Chalmers	6-30, 6-30-7, 6-40, 7-22	18
Chandler	1916-17	4
Chevrolet	H2, H3, H4, F5, D	4
Chevrolet	4-90	2
Daniels	A 1916 and early 1917	4
Daniels	late 1917	5
Davis	6-H	5
Dort	6, 9	
Empire	30, 31, 40, 45	4
Empire	60-R	20
Ford	All models	2
Franklin	Series 4 to 9	14
Hudson	20, 33, 1910-11, 33, 1912	4
Hudson	H, G, 8, 15-40, 16-40	18
Interstate	1917	4
Jeffery	471, 472, 661, 671	24
Jordan	60	18

MOSCO

TIMER FOR FORD CAR



Extra heavy pressed steel shell, aluminum finish. Insulating ring of gray bone fibre.

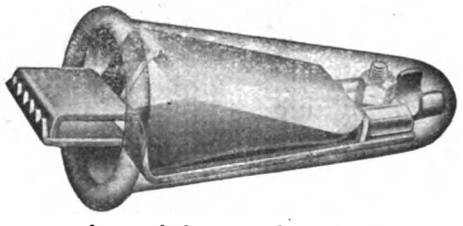
Terminals insulated all the way through. One-hand, self-closing oiler. Pressed steel arm and compression spring on brush assembly. Brush assembly can be had separate. Interesting prices:

Car	Model	W. P. No.
Lexington	6-0	20
Liberty	10A	18
Maxwell	All cars No. 52001 to 54000	6
Maxwell	" " " 54001 to 84350	7
Maxwell	" " " 84351 and up	8
Moline Knight	40C, 50C	5
Oakland	40, 42, 48, 49	5
Oakland	30, 35, 36, 37, 38	4
Oakland	32	6
Oakland	32B, 34	14
Oldsmobile	42, 43	22
Oldsmobile	44	20
Overland	60F, 60T, 69R, 69RE, 69F, 69T, 69TE, 79R, 79RE, 79T, 79TE, 80RE, 80TE, 81RE, 81TE, 83T, 83R, 83del, 85-4, 85-6	3
Overland	75 and 90 except wire wheels	6
Paige	4-36, 6-46, 6-36, 6-38	16
Peerless	54, 55, 56	18
Pierce-Arrow	36, 38	24
Premier	6-B	18
Reo	R, S, ST, J, 1912-13-14	22
Reo	J, F, M, N, R, S, 1915-16-17 Special	12
Saxon	S2, S4	3
Saxon	BR, 14R, B5R, R all models	4
Velie	15, 27	18
Velie	22, 28	20

New Models Continually Being Added. *List of Models and Prices on Application.*

MOTOR SPECIALTIES CO., *MANUFACTURERS* **WALTHAM, MASS.**

Hook Up Your Batteries With Universal Test Clips



They enable you to charge lighting and starting batteries without disconnecting them from the car.

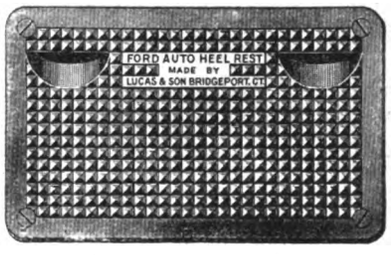
Made of steel—lead plated—may be used over and over again.

No. 21-A—1½" spread of jaws.

Sample mailed postpaid for 15c in stamps.

Single Lots, Each 20c Lots of 10, Each 15c Lots of 100, Each 12 1-2c

R. S. MUELLER & CO., 431 High Ave., S. E., Cleveland, Ohio.



HEEL REST For FORD Cars

Size 5x7 ins., ⅛ in. thick, made of frosted aluminum, with ⅝ in. polished band. Will protect rubber mats of any Ford car. Locates heel for both clutch and brake pedals (push reverse pedal with heel, it works fine). Pyramids and raised letters cast solid—cannot flatten or wear through—cannot rust or tarnish; are easily kept clean.

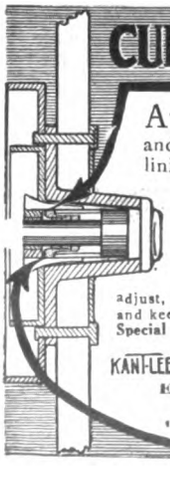
Is a neat, useful foot rest—a convenience and an economy. Sold by all dealers for $1 each or sent postpaid on receipt of price.

We make the Auto Heel Rest used extensively on other cars for the same purpose.

DEALERS: Send for circular and trade discount. Made only by

BRIDGEPORT J. L. Lucas & Son CONNECTICUT

CURE LEAKY REAR AXLES



Avoid grease and dirt on hubs and wheels, oil-rotted tires, oil-soaked brake linings and dry bearings on your FORD.

KANT-LEEK WASHERS For Fords

are the positive and inexpensive remedy. A set of four makes grease "stay put." Simple, nothing to adjust, easily applied. They'll end rear-axle bearing troubles and keep repair bills down.

Special Discount for Dealers and Jobbers. **Per Set, 90c.**

KANT-LEEK MFG. CO., Saint Louis, Missouri.

Exclusive Selling Agent, H. BECKER.

Room 306 Monroe Bldg.,

104 So. Michigan Ave., Chicago

Do Business by Mail

It's profitable, with accurate lists of prospects. Our catalogue contains vital information on Mail Advertising. Also prices and quantity on 6,000 national mailing lists, 99% guaranteed. Such as:

War Material Mfrs.	Wealthy Men	Fly Paper Mfrs.
Cheese Box Mfrs.	Ice Mfrs.	Foundries
Shoe Retailers	Doctors	Farmers
Auto Owners	Axle Grease Mfrs.	Fish Hook Mfrs.

Write for this valuable reference book. Also prices and samples of Fac-simile Letters.

Have us write or revise your Sales Letters.

Ross-Gould, 1015K Olive Street, St. Louis

Ross-Gould Mailing Lists St. Louis

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Change Your Ford into a 1 TON TRUCK for only

The Tonford unit attached to any Ford chassis makes a high-grade, dependable one-ton truck—a truck that delivers more goods at less cost than any other truck in the world.

$325

F. O. B. DETROIT

No Cutting or Welding---Only 4 Holes to Drill

Just think of it—you have this standard high-grade Tonford truck chassis, with all the economy, dependability and nation-wide service of the Ford, at less than half the price of the usual one-ton truck.

Tonford trucks solve the delivery problem of every merchant and manufacturer whose service demands quick delivery; in fact, nearly every line of business can use the Tonford at a great saving in haulage costs.

Upkeep expense is cut right in half—12-15 miles to a gallon of gasoline under full load, easy to handle in crowded traffic—you do not need any special mechanism to drive or take care of the Tonford truck—the unit is practically indestructible and you have the Ford service on the rest of the truck.

The Tonford unit comes to you all ready to put on—it fits over the frame of any Ford—new or old—bolts securely in place and reinforces the entire Ford frame. No special workmanship required to attach it—two men can do it easily in a few hours and you will have a truck chassis that will do the work of three teams at one-half the cost.

Body makers are stocking various types to take care of different business demands.

The long wheelbase allows nearly any type of body requirement.

The Tonford unit carries 90% of the load and is composed of a pressed steel channel section frame that fits over the Ford frame; the rear axle of the Ford becomes the Jackshaft of the Tonford truck by taking off the rear wheels and putting on two sprockets that we furnish. Heavy artillery truck wheels with solid tires, drop forged steel axle on Bower Roller Bearings and heavy special steel truck springs carry the load. The chain drive is efficient and easy to take care of. The long 125" wheelbase takes care of different styles of bodies and allows ample loading space.

Every part is made of the best materials and a large factor of safety allowed to take care of overload; in fact, you have all the advantages of the highest grade one-ton truck with the low upkeep, dependability and service of the Ford. You owe it to yourself and to your business to investigate the Tonford unit before you decide on the purchase of a motor truck.

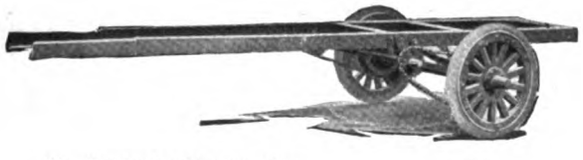
The Detroit Truck Company is composed of some of the most successful men in the Automobile industry—men who are heads of the buying, selling and executive ends of the largest companies in the business.

These men are putting their own money and energy into this Company—it is in the business to stay—with ample capital for the financing and production of 10,000 Tonford Units this year. Dealers who take on the Tonford are assured of the sales and advertising co-operation of some of the keenest minds in the automobile world, while these same men guarantee the purchaser greater value for less money.

DEALERS **Here is your chance to make some real money. Get the agency** for the Tonford unit in your territory—it means quick sales and lots of them for you. The price is right—the Tonford unit is made of the best of materials—the organization is composed of some of the best known men in the automobile industry and we are in the business to stay—plenty of money and will back you up.

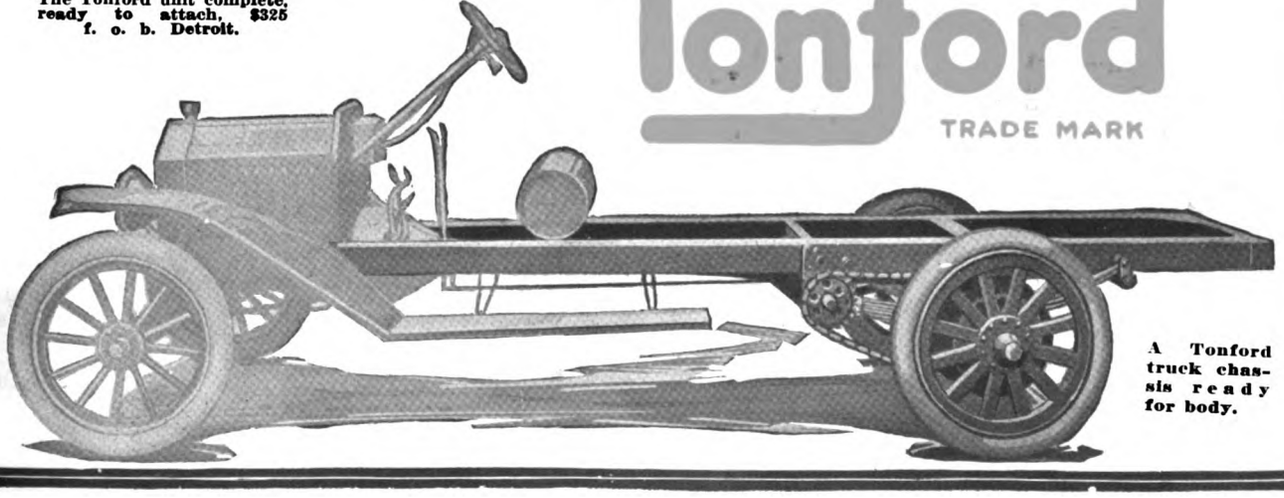
Act quickly and let us hear from you about your territory at once. Write or wire today for full information.

DETROIT TRUCK COMPANY,
DETROIT, MICH.



The Tonford unit complete, ready to attach, $325 f. o. b. Detroit.

Tonford
TRADE MARK



A Tonford truck chassis ready for body.

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NEW WRENCHES

OF

MOSSBERG

TRADE MARK

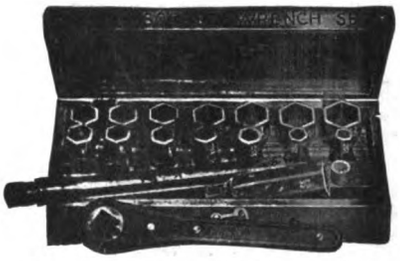
GUARANTEED QUALITY

GARAGE SET NO. 4

Nine wrenches—18 openings. Fits all sizes ¼" to ¾" U. S. Standard or S. A. E. Standard bolt or screw diameter. In wooden box. Full finish..... **$4.29**

MOSSBERG
"MOTOR" WRENCHES

K 7 inch	27c
K 8 inch	30c
K 9 inch	38c
K 10 inch	44c



SOCKET WRENCH SET NO. 13

15 hex. sockets, extension tube and ratchet handle in chestnut box

$3.50

Guaranteed for Garage or Shop Equipment

UNIVERSAL
VALVE LIFTER NO. 655
Ratchet lock and spring release.

80c

UNIVERSAL VALVE GRINDER NO. 610. Adjustable to any type of valve tops.

Price, $1.00

Just the Wrenches That Sell. Just the Way to Sell Them.

Socket Wrenches. Engineers' Wrenches.

DISPLAYS—FREE

Ask for full information---Catalogue 181-A.

FRANK MOSSBERG CO.

ATTLEBORO, MASS. U. S. A.

SOCKET CHEST NO. 300

No. "Y" Display Board

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JUL 8 1916

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THE ACCESSORY and GARAGE JOURNAL

VOL. VI. NO 2. PAWTUCKET, R. I., JUNE, 1916 $2.00 the YEAR

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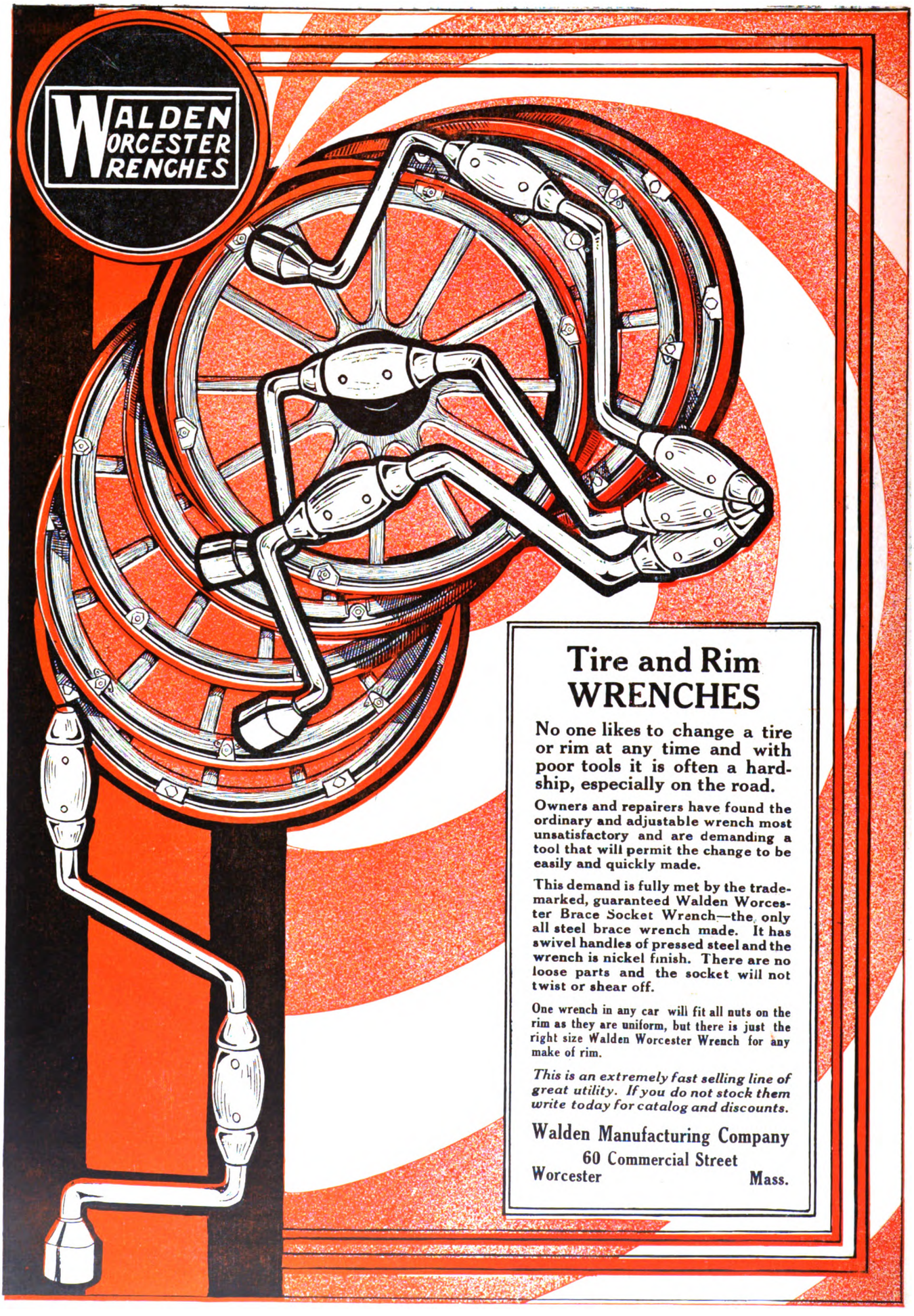

Tire and Rim WRENCHES

No one likes to change a tire or rim at any time and with poor tools it is often a hardship, especially on the road.

Owners and repairers have found the ordinary and adjustable wrench most unsatisfactory and are demanding a tool that will permit the change to be easily and quickly made.

This demand is fully met by the trademarked, guaranteed Walden Worcester Brace Socket Wrench—the only all steel brace wrench made. It has swivel handles of pressed steel and the wrench is nickel finish. There are no loose parts and the socket will not twist or shear off.

One wrench in any car will fit all nuts on the rim as they are uniform, but there is just the right size Walden Worcester Wrench for any make of rim.

This is an extremely fast selling line of great utility. If you do not stock them write today for catalog and discounts.

Walden Manufacturing Company
60 Commercial Street
Worcester Mass.

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VOL. VI. NO. 3. PAWTUCKET, R. I., JULY, 1916. $2.00 the YEAR

THE ACCESSORY and GARAGE JOURNAL

BACK OF THE DEALER

When you, as a Dealer, have back of you the Reputation, the Customers, the real, satisfying, money-making ability of

MULTIBESTOS

you can feel certain of holding and enlarging your brake-lining trade.

You cannot give your customers any better brake-lining ---and you cannot give yourself any better business proposition.

It is our policy to help YOU, THE DEALER, all we possibly can. Upon you we depend for proper treatment of MULTIBESTOS buyers and you can depend upon us to deal squarely with YOU.

If not convinced of this by a cordial relationship already established with us, write *NOW* and find out what we do for you.

It will give you a new light on the brake-lining business, put extra dollars in your pocket and new customers in your store.

STANDARD WOVEN FABRIC COMPANY, Walpole, Mass.

BOSTON, CHICAGO, PHILADELPHIA, NEW YORK, SAN FRANCISCO.

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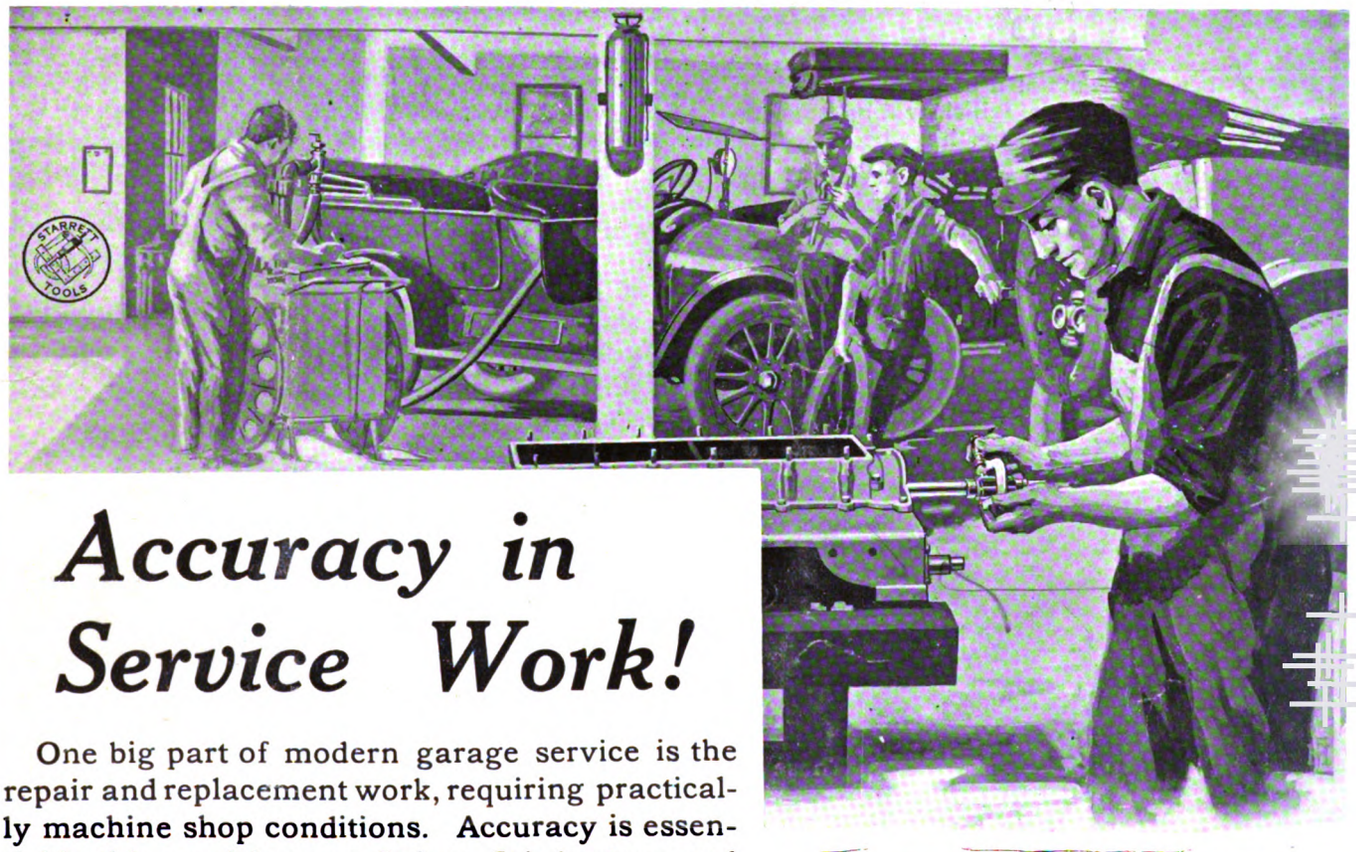
VOL. VI. NO. 6. PAWTUCKET, R. I., OCTOBER, 1916 $2.00 the YEAR

THE ACCESSORY and GARAGE JOURNAL



Accuracy in Service Work!

One big part of modern garage service is the repair and replacement work, requiring practically machine shop conditions. Accuracy is essential in this repairing or refitting. It is best assured in garages, as in machine shops, by the use of

TRADE MARK
Starrett Tools
REG. U.S. PAT. OFF.

For every practical requirement in measuring in mechanical work there's a Starrett suited to the job. No matter how accurate your requirements, Starrett tools can be relied on.

Every garage should have a copy of our 336 page catalog No. 21 G. T. sent free on request.

Tools that should be in every garage

Rules—Micrometers
Squares—Wire Gages
Levels—Height Gages
Protractors—Hack-Saws
Calipers—Thread Gages
Pliers—Thickness Gages
Dividers—Surface Gages
Tap Gages—Drill Gages.

The L. S. Starrett Co., Athol, Mass.

THE WORLD'S GREATEST TOOLMAKERS.

42-548

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New Garage and Shop Tools

All Walden-Worcester guaranteed wrenches are time and labor saving tools, designed especially for these purposes. To do work right, to satisfy customers and make big profits, special tools are essential in the equipment of any garage, repair or machine shop.

The New Walden-Worcester Speed Wrenches

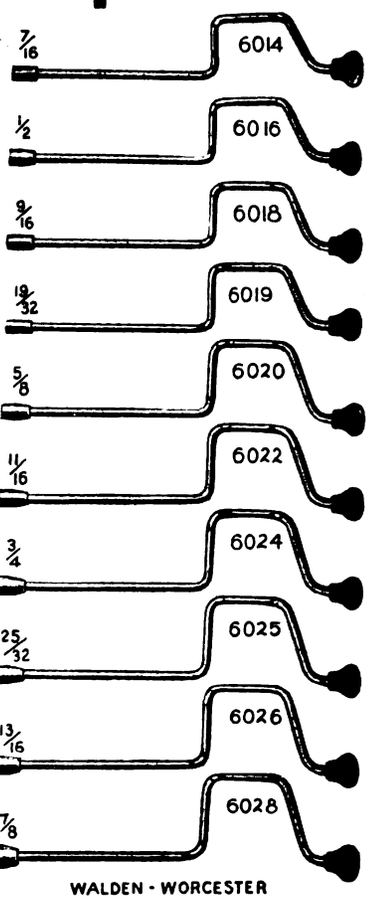
This set consists of a combination of ten long shank brace socket wrenches, the cost of which will be saved on the first few jobs. Wherever used these wrenches have been found almost indispensable.

By using the offset wrench to release a tight set nut it can be spun off almost instantly with the speed wrench. When dismantling or assembling a car, or when removing a number of nuts of the same size, these wrenches are extremely efficient.

Look for the Walden-Worcester trade mark. These wrenches are made for hard and long usage in any service. Guaranteed to give full satisfaction. The sockets will not turn or work loose—sockets held by keys or pins always do.

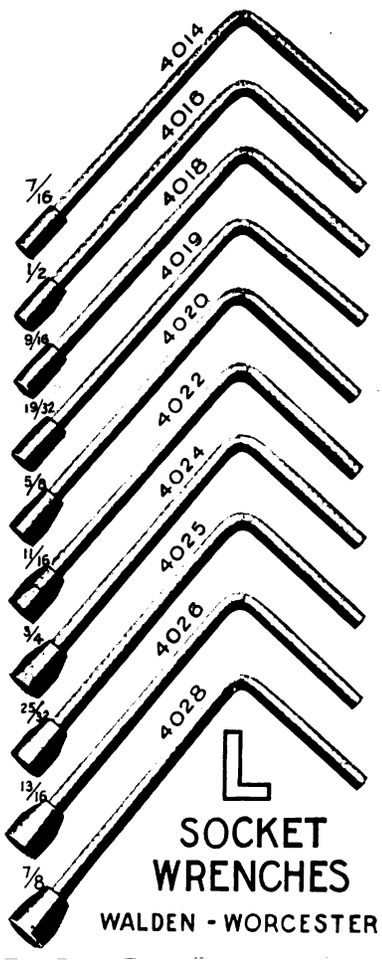
List price, Set No. 600, Ten Wrenches, $6. Single Tool, 65 cents.

(Always give our stock number when ordering.)



WALDEN - WORCESTER

SPEED WRENCHES



SOCKET WRENCHES

WALDEN - WORCESTER

Look for the Name
WALDEN-WORCESTER
Stamped on Every Wrench

New Walden-Worcester L Socket Wrenches

These wrenches are designed to meet the heavy demand for tools that can be used against a wall. Tee handle wrenches are useless for that kind of work.

Money and time are wasted on every job when make-shift tools are used. Progressive auto repairers demand special tools. Walden-Worcester L socket wrenches save their cost a hundred times in a year.

List Price, No. 400, Ten Wrenches, $4. Single Wrench, 45 Cents.

(Always give our stock number when ordering.)

JOBBERS AND DEALERS

The trade and the owners of cars demand special tools, and there is a Walden-Worcester wrench made for every job. Send today for copy of our new catalogue and discount sheets. Our free and attractive storage cabinets, silent salesmen display boards, circular matter and sales helps will interest you.

When you specialize in wrenches you secure the business in your territory. Earn the big profits, hold your trade and increase your business by selling Walden Worcester Guaranteed Wrenches.

WALDEN MANUFACTURING COMPANY

60 COMMERCIAL STREET, WORCESTER, MASS.

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VOL. VI. NO. 7. PAWTUCKET, R. I., NOVEMBER, 1916 $2.00 the YEAR

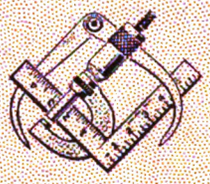
THE ACCESSORY and GARAGE JOURNAL

TRADE MARK

Starrett

REG. U. S. PAT. OFF.

Tools



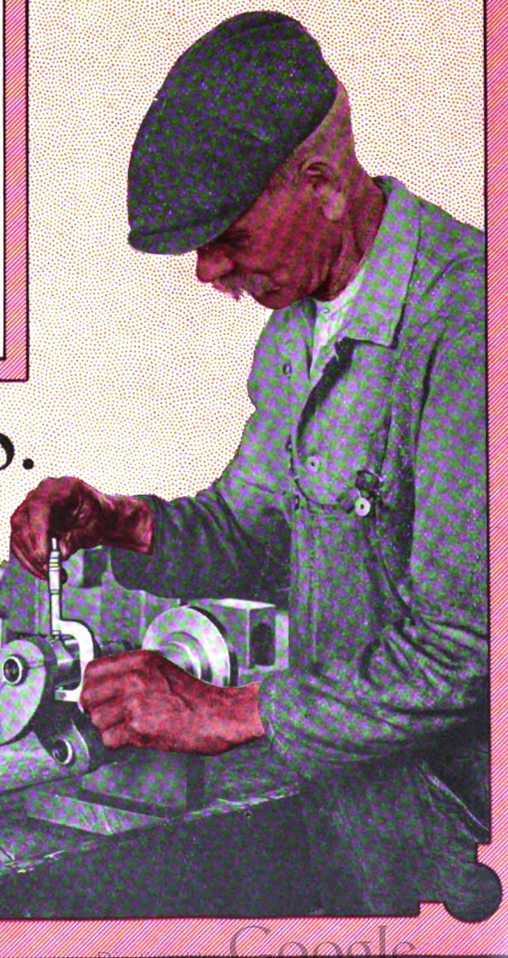
To insure accuracy both in the production and in the repair of automobiles, the best manufacturers and service stations use Starrett Tools.

From the 2100 styles and sizes in the Starrett line, a machinist may always select some tool well suited to his particular work.

The line includes rules, squares, levels, calipers, dividers, micrometers, vernier calipers, surface gages, height gages, ratchet wrenches, etc.

Free catalog No. 21 G. T. describes the full line.

42-579



The L. S. Starrett Co.

The World's Greatest Toolmakers

Athol, Mass.

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WRENCHES and SHOP ECONOMY

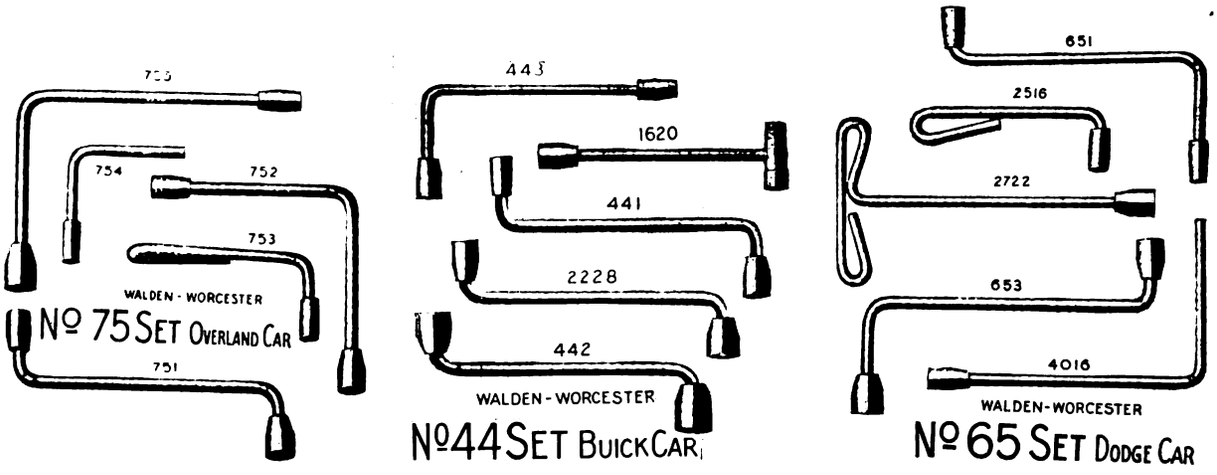
The well-managed, up-to-date and progressive garage, repair or machine shop that does quality work is equipped with tools that fit the job.

These repairers have learned by experience, that makeshift wrenches are causes for loss of time, wasted effort and overcharges for customers. Results—a poor job, marred or broken parts, and—when the practice is continued—still greater loss in patronage, earnings and standing.

The worker who knows the value of good tool service always uses the right wrench. His work satisfies himself, the man who pays his wages and the customer. Such tools cost no more than inferior ones and form the most profitable shop investment that can be made.

Special Overland, Buick and Dodge Wrench Sets.

Our special wrench sets for Ford cars have met with such phenomenal sales among car owners and repairers that Jobbers and dealers are now demanding special Walden-Worcester Wrench sets for other makes of cars. The constantly increasing demand is further assurance of the specific call for special wrenches.



Nº 75 SET OVERLAND CAR — Nº 44 SET BUICK CAR — Nº 65 SET DODGE CAR

The sets illustrated are complete, and will fit all nuts and bolts on the makes of car for which they are listed. No other wrenches are necessary or desirable.

All Walden-Worcester Wrenches are time and labor saving tools—sold under the fullest guarantee with our trade mark that protects the buyer. There are no other wrenches just as good, nor none that will endure so long in hard usage.

All Jobbers and Dealers should have a copy of our new catalogue—it is free at request. In it are illustrated, priced and listed the wrenches you can sell and the tools all owners and repairers buy to use. Facts in connection with our attractive storage cabinets, silent-salesmen display boards, sales helps, etc., will interest you. Correspondence invited.

WALDEN MANUFACTURING COMPANY

60 Commercial Street WORCESTER, MASS.

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VOL. VI. NO. 8. PAWTUCKET, R. I. DECEMBER, 1916. $2.00 the YEAR

THE ACCESSORY and GARAGE JOURNAL

TRADE MARK

Starrett

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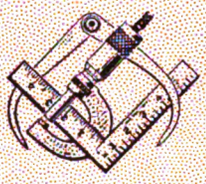
Tools



WHENEVER accuracy is essential in service station, in garage, in metal manufacturing, shop standards are maintained by the use of Starrett Tools.

These precision measuring instruments have given years of satisfactory service in hundreds of machine shops and repair shops.

There's some Starrett Tool suited to every practical need in repair or production work.

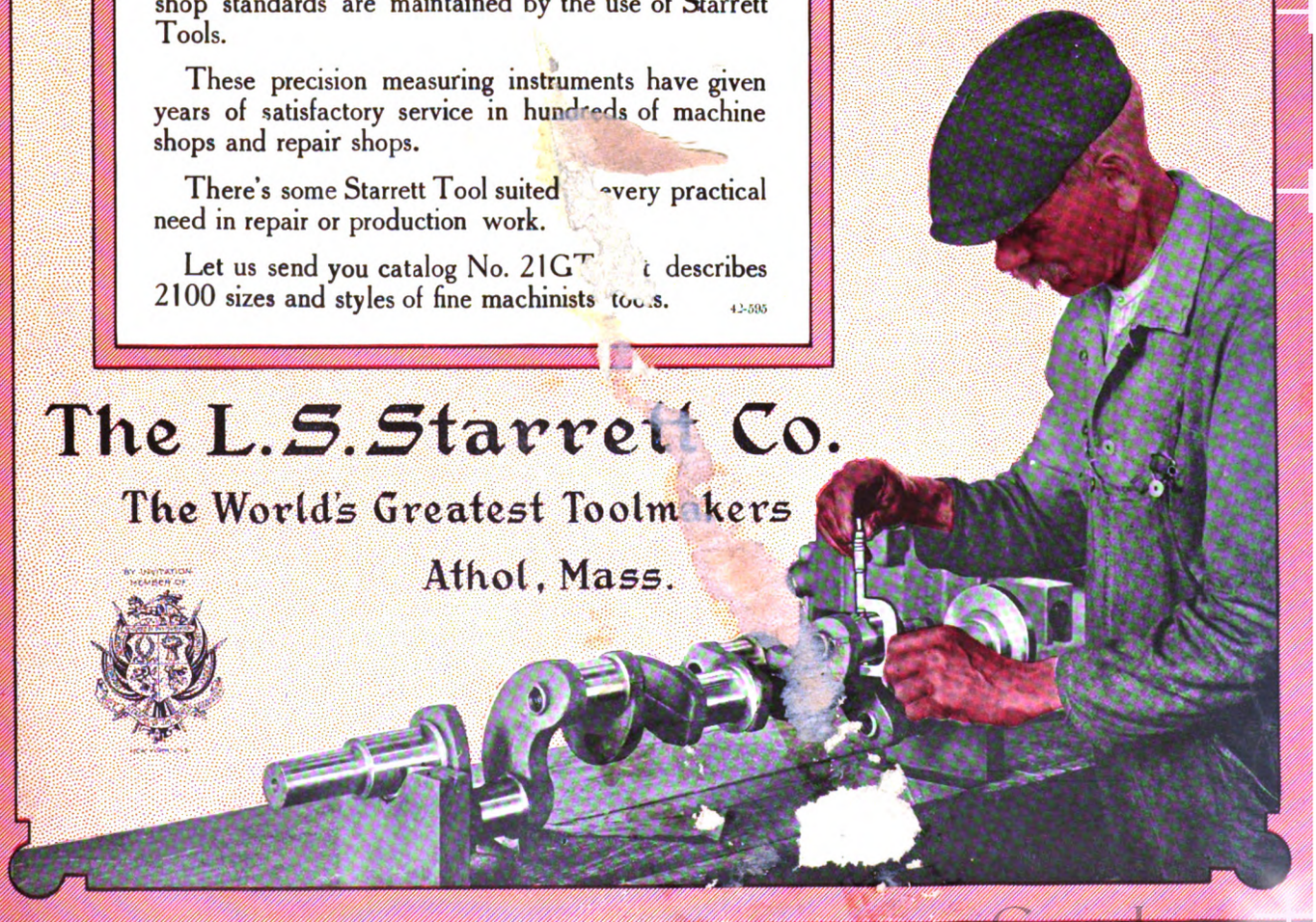
Let us send you catalog No. 21GT which describes 2100 sizes and styles of fine machinists' tools. 42-595

The L. S. Starrett Co.

The World's Greatest Toolmakers

Athol, Mass.

BY INVITATION MEMBER OF



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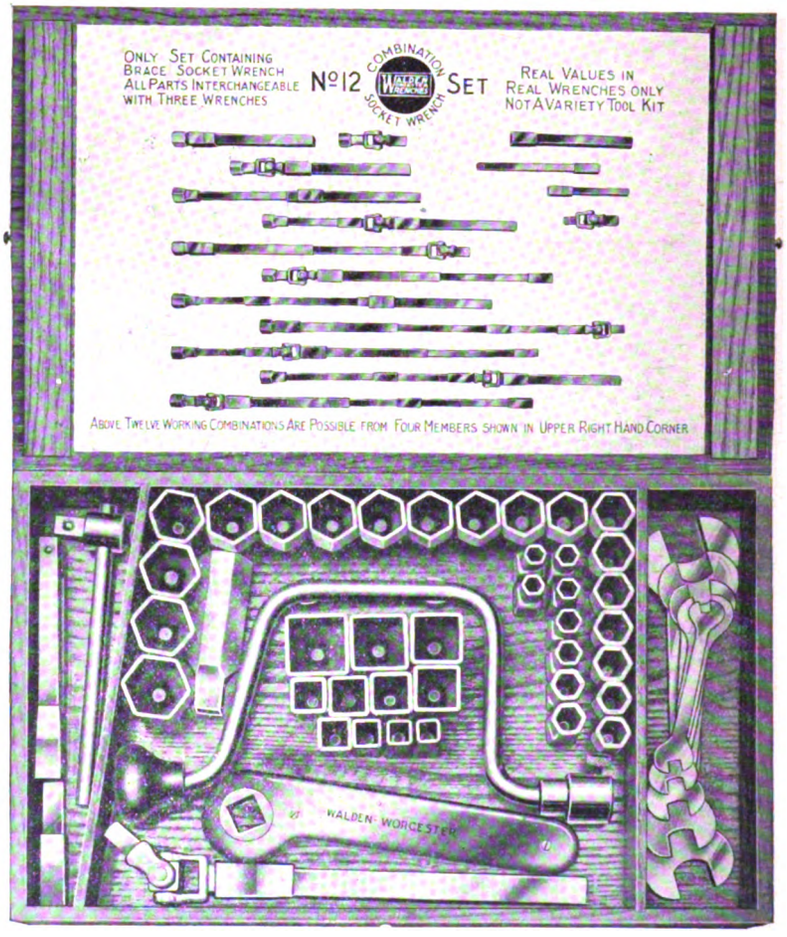
No. 12 Combination Socket Wrench Set

This set is the most complete Combination Socket Wrench Set containing 51 real Combination Wrench Parts and is not intended as a variety wrench set but as the last word in Combination Socket Wrench Sets.

Ratchet Wrenches give continuous action once applied to the nut and are time and temper savers working efficiently in most confined quarters. **Brace Socket Wrenches** are best known for use on Demountable Rims but are invaluable as speed wrenches in assembling and dismantling cars. **Combination Offset and Tee Handle Wrench** (two wrenches in one) are most useful and satisfactory as substitutes for either of the above tools in many places. 3 wrenches cover the full range of requirements for Combination Socket work. 38 assorted fully guaranteed **Pressed Steel Sockets** cover all standard sizes of hexagonal and square nuts for automobile work and can be used directly with either of the 3 wrench handles, or in Combination with Extension Bars and Universal Joint. **3 Extension Bars,** 6", 9" and 9" long can be used singly with either wrench or in Combination with Universal Joint making **12 different Combinations** as illustrated making it possible to reach practically any nut in the open or with the **Universal Joint** at an angle of 45 degrees and reaching with extension bars a distance of 25 inches into practically inaccessible positions.



CONTAINS:

1 Ratchet Wrench 9"
3 Extension Bars
1 Universal Joint
1 Tee and Offset Wrench
27 Hex Sockets
11 Square Sockets
1 Spark Plug Socket
5 Open End Wrenches
1 Brace Socket Wrench

(The only set containing this last named tool.)

PRICE $12.00

The feature of this combination being the wrench is always used as close to the nut as working space will permit, insuring always 100 per cent. efficiency. The set of **five** thin steel tempered **open end** wrenches, 10 sizes will take care of many places where it may not be possible to use a socket.

The wooden box is well finished, cover removable for greatest convenience in use, with compartments and places for tools and sockets, allowing, ample and convenient space for each of the parts. All parts are **WALDEN-WORCESTER** guaranteed quality.

All Jobbers and Dealers should have a copy of our new catalogue. Our free attractive storage cabinets, silent-salesmen display boards, sales helps, etc., will interest you. Do not fail to list all Walden Worcester Wrenches in your catalogue.

WALDEN MANUFACTURING COMPANY

60 Commercial Street, WORCESTER, MASS.

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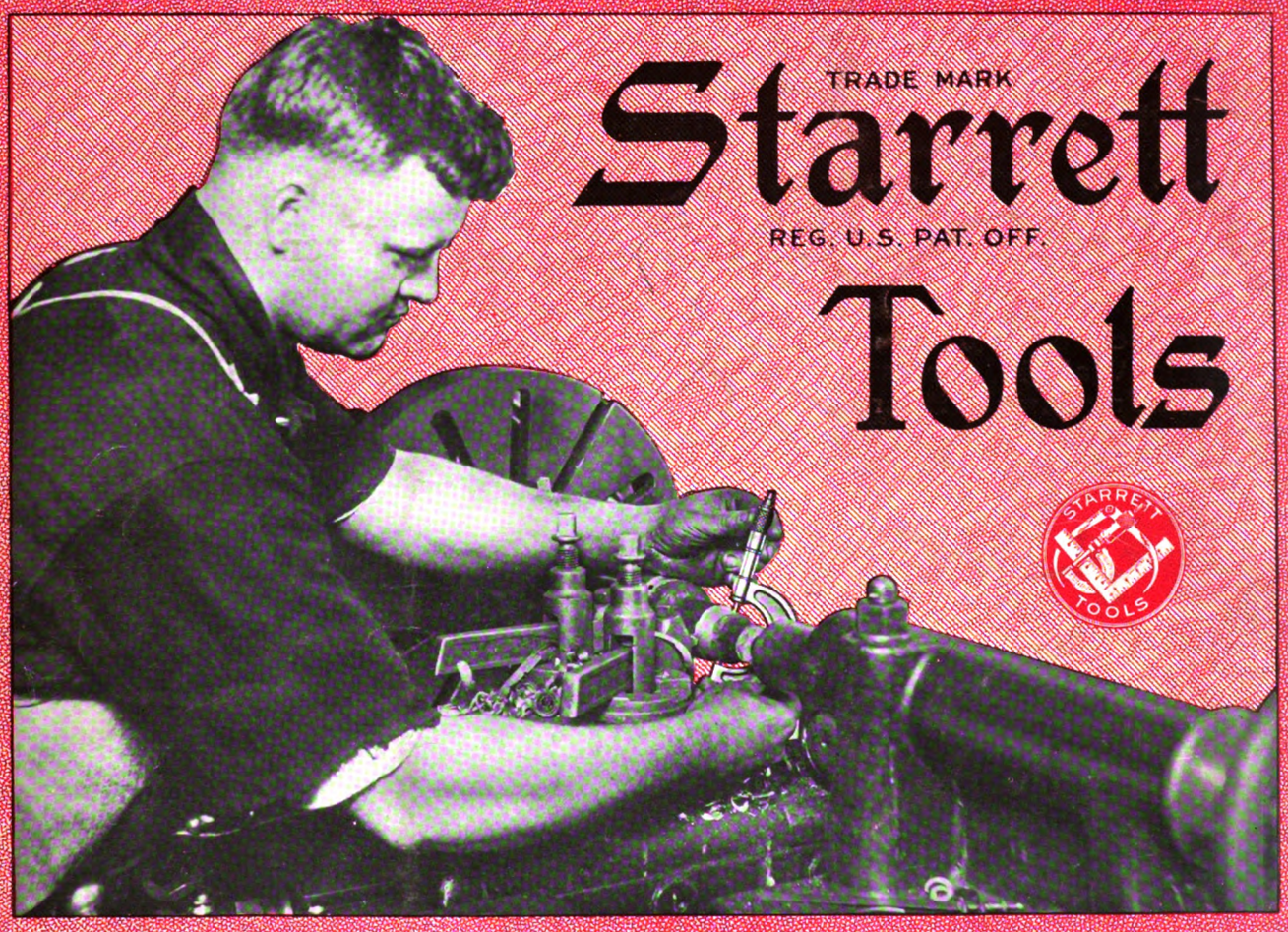
VOL. VI. NO. 9. PAWTUCKET, R. I., JANUARY, 1917. $2.00 THE YE

THE ACCESSORY and GARAGE JOURNAL



TRADE MARK
Starrett
REG. U.S. PAT. OFF.
Tools

STARRETT TOOLS

Developments in Automobile Production and Repairs

have been tremendous, due to efficient organizations and improved machines. But one of the most prominent factors—measuring tools—have enabled manufacturers, service stations, garages, and repair men to get the desired results without wasting time and material. In nearly every automobile shop in the country Starrett Tools are daily serving mechanics who are never satisfied with "pretty good work."

Our free catalog No. 21-GT describes 2100 styles and sizes of fine measuring instruments adapted to all kinds of automobile work. Write for your copy.

The L·S·Starrett Co·,Athol,Mass·

World's Greatest Toolmakers

42-626

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The *ANSWER*--

Popular interest had already been strongly aroused by the TRUCKMOBILE.

This fact we knew.

We really underestimated, however, the flood of positive approval from dealers and prospective buyers who came in by the hundreds during Auto Show Week.

At first they were critical. And some were skeptical.

But every one of them knew just what he wanted. Each one had his own fixed ideas on truck attachments.

Individually and collectively they had made the rounds and looked at each of the 57 varieties exhibited.

Then when they saw the real truck attachment—the TRUCKMOBILE—some of them were surprised they had overlooked it heretofore.

But all of them were delighted for they saw at a glance the answer to all their ideas and even more.

Each and every one of them appreciated and approved of the ten big points of superiority.

You will be convinced just as easily if you will look over the TRUCKMOBILE itself or let us send you our literature.

"Biggest of them all!"

Here Is Why—

1—The TRUCKMOBILE has a longer wheel base—133 inches.

2—The TRUCKMOBILE rides easier under light as well as heavy loads, due to spring construction and long wheel base.

3—Less side sway to frame and body on TRUCKMOBILE—due to method of spring attachment.

4—Wider body permitting larger body dimensions. Width 41½ inches.

5—More massive construction of carrying parts.

6—Fewer parts and fewer cares.

7—Bell sprocket that can be attached in a few moments—*keys right on to the jackshaft.*

8—Load strain on axle properly distributed because side springs are nearer wheel center than on others.

9 Requires less of dealer's time for making attachment to Ford chassis.

10—Destroys none of the used or unused parts of the Ford car.

$350

And a Ford Chassis
(Old or New)

We only allow one dealer to handle TRUCKMOBILE in a territory, but you may rest assured everybody in that territory knows about him.

If you have not heard of a dealer in your territory write at once for our proposition.

The Commercial Truckmobile Co.
E. F. KIRCHBERGER, Pres
Dept. M-2, 1606 Michigan Ave.
Chicago, Ill.

TRUCKMOBILE

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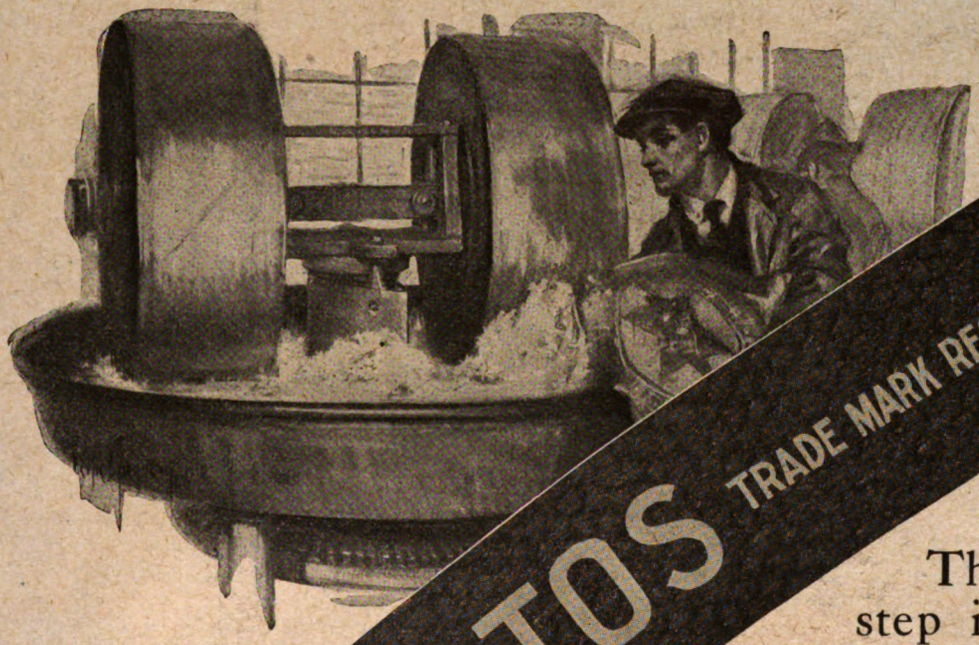
VOL. VI. NO. 11. PAWTUCKET, R. I., MARCH, 1917. $2.00 THE YEAR

THE ACCESSORY and GARAGE JOURNAL



MULTIBESTOS TRADE MARK REG.

The first step in the manufacture of Multibestos is the careful selection of long fibre asbestos. An extensive search of the world's markets has taught us that the mines of Canada offer the only grade of this rock suitable for a brake lining of such high quality.

After the selection is made and the shipments are passed upon by our experts the asbestos is delivered to our Walpole factory in carload quantities.

First comes the crushing process in which the crude material is pressed under heavy steel rollers. This crushing transforms the rock into a fluffy mass and from this mass the yarn is spun which forms the basis of the multiple weave of Multibestos.

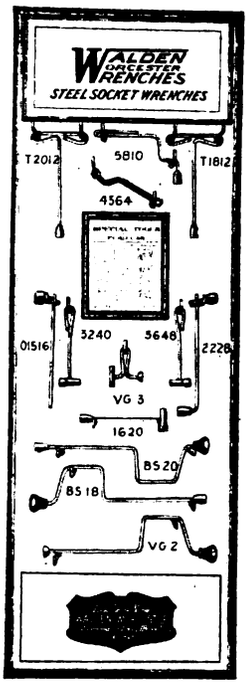
The spinning process as well as the weaving and other methods of treatment will be set forth in subsequent advertisements.

The idea of this series will be to acquaint the trade with each step in the most thorough manufacturing policy known to the brake lining industry — a policy that is the big reason back of Multibestos supremacy.

STANDARD WOVEN FABRIC COMPANY
WALPOLE, MASS.

Silent Salesmanship

AN ACTIVE and producing Salesman is the man that knows how to reach real buyers; tells them of the quality of his lines and displays his goods.

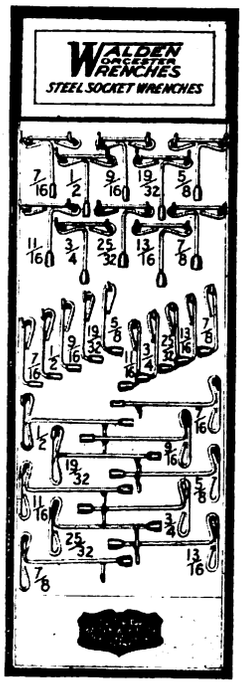


He is always on his job and is on the producing end. He establishes his worth by the business that he does and becomes an asset to the concern, as he helps to swell the dividends.

Among jobbers and dealers the ***Walden-Worcester Wrench Silent Salesman Way*** is just as affective. Always working, never tires or stops producing. There is no cost attached to it and there is no overhead to cut the profits. It talks to thousands of buyers every day and displays the most complete lines of wrenches ever sold by the trade.

All Wrenches Needed or Desirable for Use On the Ford Car

A striking example, and one of many of the Walden-Worcester Wrench Silent Salesman Display Boards, is the No. 78, showing special wrenches for use on the Ford car. It makes a handsome and attractive display and it is an ornament in any place of business. On this board there is a wrench that will fit any nut or bolt from any position or angle on the Ford. They can be purchased singly or from the display. A complete combination can be selected that will meet every need of the owner or repairer. The cost is less than for other quality wrenches. They will last longer than other wrenches in any service and are guaranteed in every way and sold under the Walden-Worcester ***World Known Trade-Mark.***



Wrenches From Stock to Meet All Demands For Any Work

The illustration, showing No. 180 display and stock set, gives but a general idea of the complete line of Walden-Worcester wrenches on this board. There are three types and ten sizes of each type, and six wrenches of each size and type, making a total of 180 offset and tee-handled wrenches. From this stock a wrench can be selected that will fit any need or a general combination can be built up that will meet every service requirement.

Owners and repairers are demanding special dependable quick working time and labor saving tools. Makeshift wrenches cost too much in lost time and labor. Walden-Worcester wrenches cost no more; will last for years, and there is just the tool for every job or a combination set that will meet every wrench requirement in the largest shop.

Free To Walden-Worcester Dealers

JOBBERS AND DEALERS: We want you to know all about our special handsome storage cabinets; how they would fit in your business; our silent salesman display boards; our selling co-operation; the class of selling literature that we supply, and other facts that you should know.

Write today for latest catalogue

WALDEN-WORCESTER
INCORPORATED
WORCESTER, MASS.

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VOL. VI. NO. 12. PAWTUCKET, R. I., APRIL, 1917. $2.00 THE YEAR.

THE ACCESSORY and GARAGE JOURNAL

MULTIBESTOS TRADE MARK REG.

Converting Asbestos Fibre Into Yarn

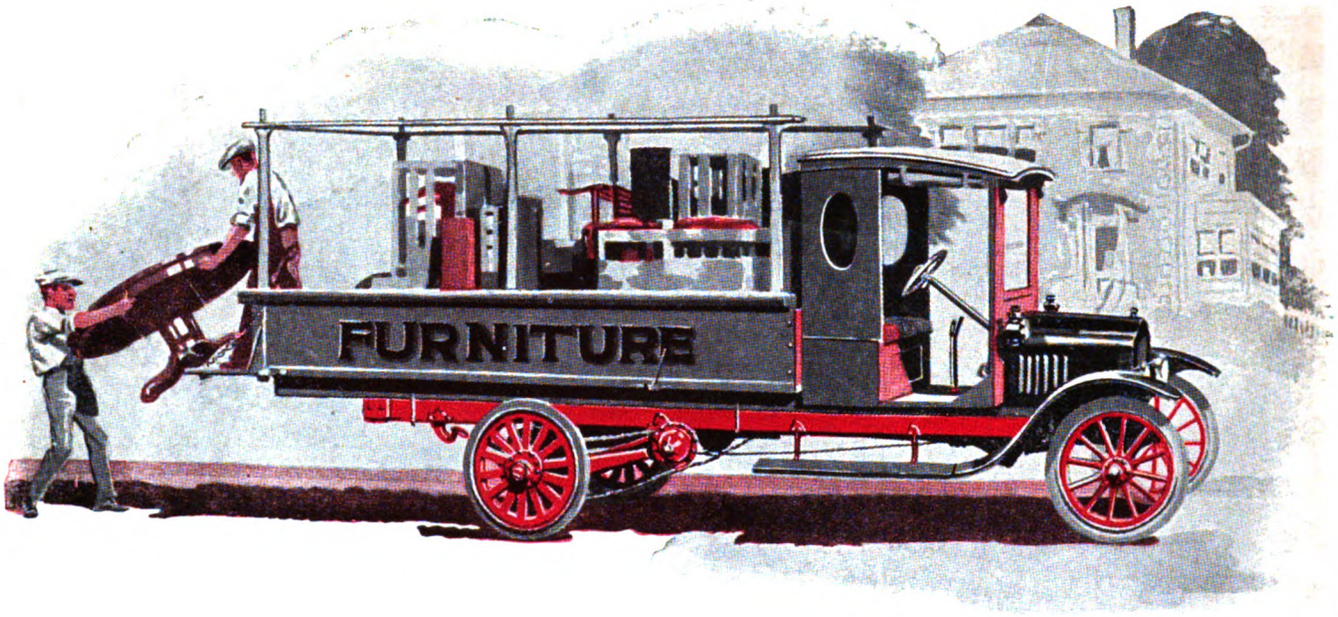
One of the most important steps in the production of MULTIBESTOS brake lining is the spinning of the asbestos yarn.

When the asbestos rock is crushed the fluffy mass of loose fibres is put into a picking machine which combs out the material and works the fibres all in the same direction.

These combed out fibres are then placed in carding machines which are almost human in their motions. By a system of rollers operating in a side to side motion as well as revolving, the fibres are twisted between the fingers. The huge machine-fingers of our fleet of carding machines turn out daily a quantity of 3,000 lbs. It takes all of this to meet the demands of our weaving department where thousands of feet of Multibestos for brake lining and clutch facings are made daily.

There is still another process in spinning the yarn before it will pass the quality test. This and other features in the production of Multibestos will be described in subsequent advertisements in this paper. Watch for these descriptions and you will learn the why of Multibestos supremacy.

STANDARD WOVEN FABRIC COMPANY
WALPOLE, MASS.



The One Truck Attachment That Won the Country's Biggest Dealers!

NO other truck attachment made such a pronounced appeal to the "men who know" as the TRUCKMOBILE. No other truck attachment had such a complete victory with the country's biggest dealers as the TRUCKMOBILE.

In less than one year the TRUCKMOBILE has come to a big, distinctive place, both among the trade and among users in all lines of business. It is going big—as it was ***destined*** to go big as the ***standardization*** of the great truck attachment idea.

The men who sell the TRUCKMOBILE are getting the co-operation from us that such a triumph as the TRUCKMOBILE deserves. Every day we are planning new sales helps, bigger advertising forces—not haphazard, spasmodic stunts, but sound, sustained and effective merchandising work.

If you have not fully posted yourself on the TRUCKMOBILE itself and our big exclusive territorial dealer's proposition, write or wire us at once.

The Commercial Truckmobile Co.
E. F. KIRCHBERGER, President
Dept. M-4
1720 So. Michigan Avenue
CHICAGO, ILL.

Biggest of Them All!

1. The TRUCKMOBILE has a longer wheel base—133 inches.
2. The TRUCKMOBILE rides easier under light as well as heavy loads, due to spring construction and long wheel base.
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4. Wider body permitting large body dimensions. Width, 41½ inches.
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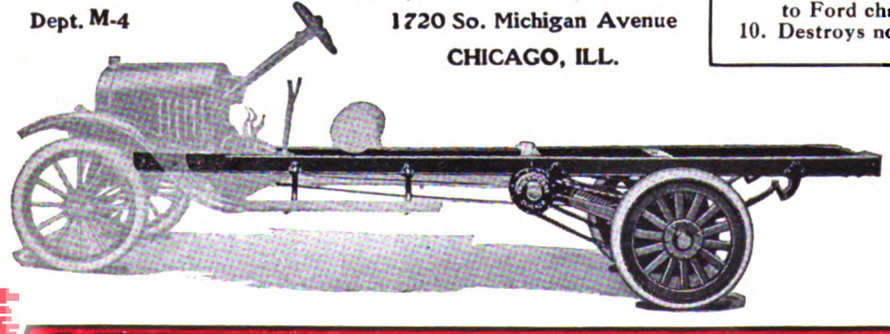
6. Fewer parts and fewer cares.
7. Bell sprocket that can be attached in few moments—*keys right on to the jackshaft.*
8. Load strain on axle properly distributed because side springs are nearer wheel center than on others.
9. Requires less of dealer's time for making attachment to Ford chassis.
10. Destroys none of the used or unused parts of Ford car.



$350
And a Ford Chassis
(Old or New)

TRUCKMOBILE

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A·B·C

TWO-UNIT SIX-VOLT

STARTING & LIGHTING SYSTEM

for Ford Cars

Here are a few reasons why it is easy for All Dealers to sell A.B.C. Starting and Lighting Systems

1—The A.B.C. is a two-unit system—the same type used on all high-priced cars.
2—The A.B.C. is the lightest and most compact system on the market.
3—The A.B.C. starting motor puts no drag on the engine. The starter is idle while the engine is running.
4—The A.B.C. generator consumes but one-eighth horsepower.
5—The A.B.C. is the only Ford starter that eases off the strain of "back-firing."
6—The A.B.C. has no chains to break and rattle.
7—The A.B.C. has its weight equally divided on each side of the car.
8—The A.B.C. does not interfere with the accessibility of the Ford engine.
9—The A.B.C. puts less "draw" on the battery than any other Ford system.
10—The A.B.C. puts the starting strain at the exact point where Ford designers intended it should go.
11—The A.B.C. requires no change to be made in Ford construction.
12—The A.B.C. Starting and Lighting System is absolutely guaranteed against construction faults and material defects.
13—The A.B.C. System is more easily installed than any other starting and lighting system for Fords.
14—The A. B. C. is "priced to the peoples' purse;" but it is just as well made, efficient and durable as the highest priced system on the highest priced car.

Read 1, 3 and 7 again. They'll convince any intelligent Ford Owner that the A.B.C. System is the best for him

You know—and every other well-posted Dealer knows—that there's a big demand for Ford Starters. Every Ford Owner is a prospective purchaser. The dealer with the right kind of starter—the starter that makes good, not only once, but all the time—is the one who makes the money. No "single unit" starting and lighting system will do the work and do it well. You know that. The single unit system was discarded by manufacturers of high-priced cars, because it failed. It fails on Fords. Ford Owners won't tolerate the "discards" of other manufacturers. They want the best. You can give them the best—at no greater price than they would pay for a single unit system. If you sell a poor system you buy trouble. You lose time and labor. You're all the time listening to kicks—making repairs and adjustments. You speed your profit on the sale making it "stick."

A·B·C STARTER·COMPANY DETROIT

As a matter of policy, principle and profit you can't afford to sell anything but the best. That's the A.B.C.—from every angle. The A.B.C. Starting and Lighting System is easy to sell—easy to install—and—it stays sold. It lets you keep the money you make.

YOU'LL BE GLAD TO GET WHAT THIS COUPON WILL BRING YOU

A.B.C. Starter Co.
Dept. B.
Detroit, Mich.

Gentlemen: — Please send full information regarding the A.B.C. Two-unit Starting and Lighting System, including literature, prices terms, discounts, etc.

Name .....
Address .....
City..... State.....

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Nearly a Million FORDS on the Road

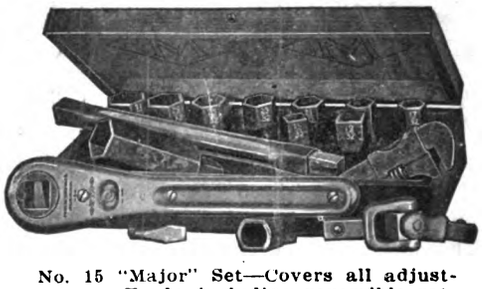
Help KEEP them on the Road by Using

MOSSBERG WRENCHES

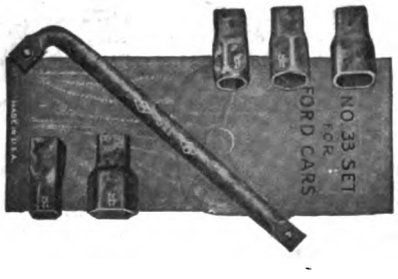
And Special Tools for FORDS

No. 17 Set—Heavy duty for Ford. 10 sockets, including those special sockets for spark plug, rear axle housing and cylinder head nuts. Price each, **$2.00.**

No. 30 "Ideal" Set for Fords. 10 sockets, including all special sizes. Ratchet handle, universal joint and extension bar. Price each, **$4.00.**



No. 15 "Major" Set—Covers all adjustments on Fords, including reversible ratchet handle. Price each. **$5.00.**



No. 33 Set—A small, forceful set for packing under the seat. Five special sockets and double-end offset handle. Price each, **$1.10.**

This Means

TRADE MARK

Actual Insurance

If your dealer cannot supply you we will ship prepaid on receipt of price.

Specially designed for Fords. Engineers' wrenches. 5 wrenches. 10 openings.

Your copy of complete Mossberg Tool Book No. 191A if you will send address.

No. 645. Reverse and Brake Pedal Tension Spring Wrench. The only practical wrench for this work Each, **50c.**

660 Wheel Puller. Indestructible and efficient. Each, **80c.**

Combining all the special wrenches that help the smooth running of your car. Price, **$1.40.**

FRANK MOSSBERG CO.

ATTLEBORO, MASS., U. S. A.

BRANCHES

Hastings & Anderson Co., Chicago, Ill
F. W. Lynn, Dallas, Texas.
D. L. Herman, Seattle, Wash.
W. W. Crandall Co., Nashville, Tenn.
Ewing-Lewis Co., San Francisco, Cal
Ewing-Lewis Co., Los Angeles, Cal.

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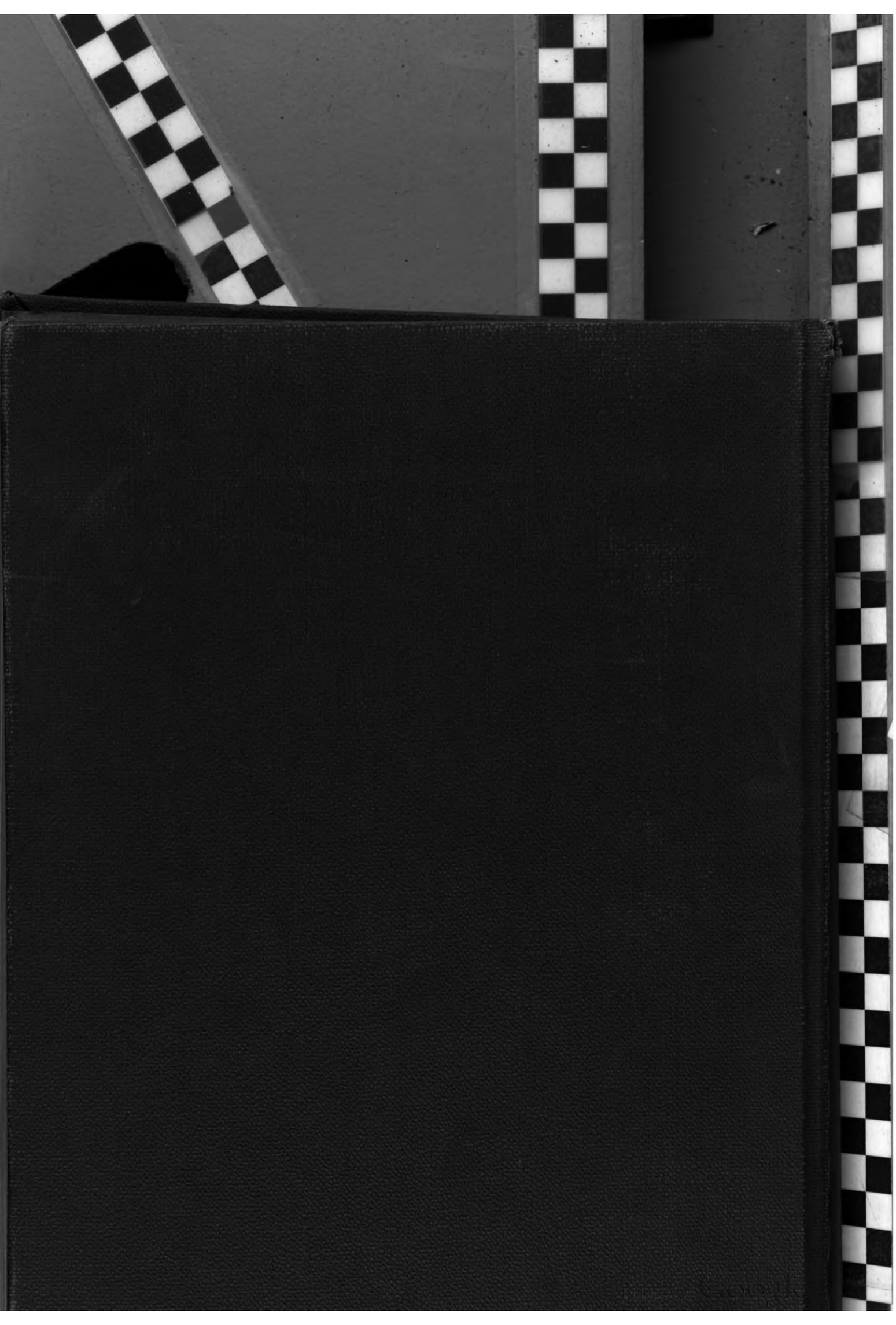

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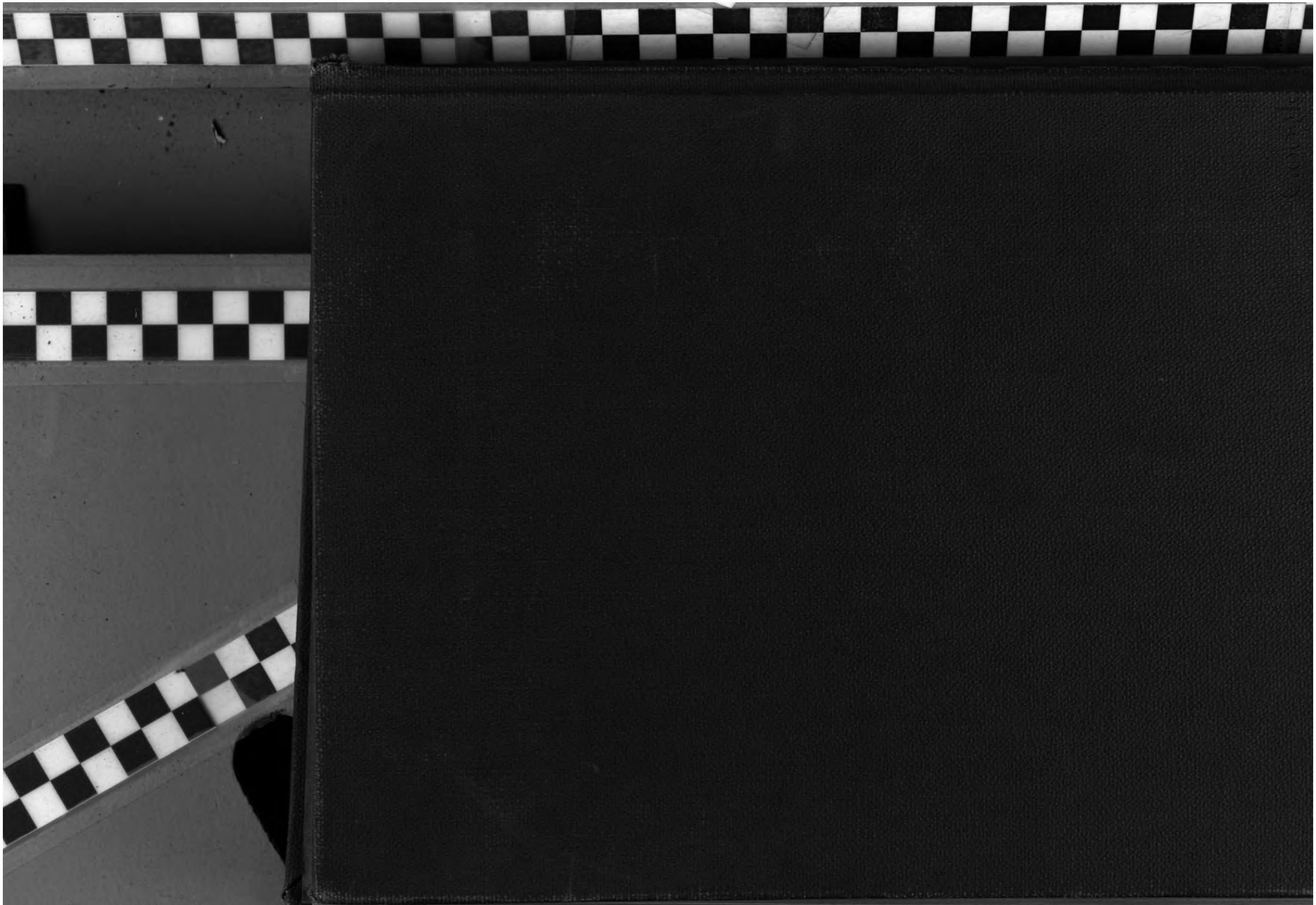

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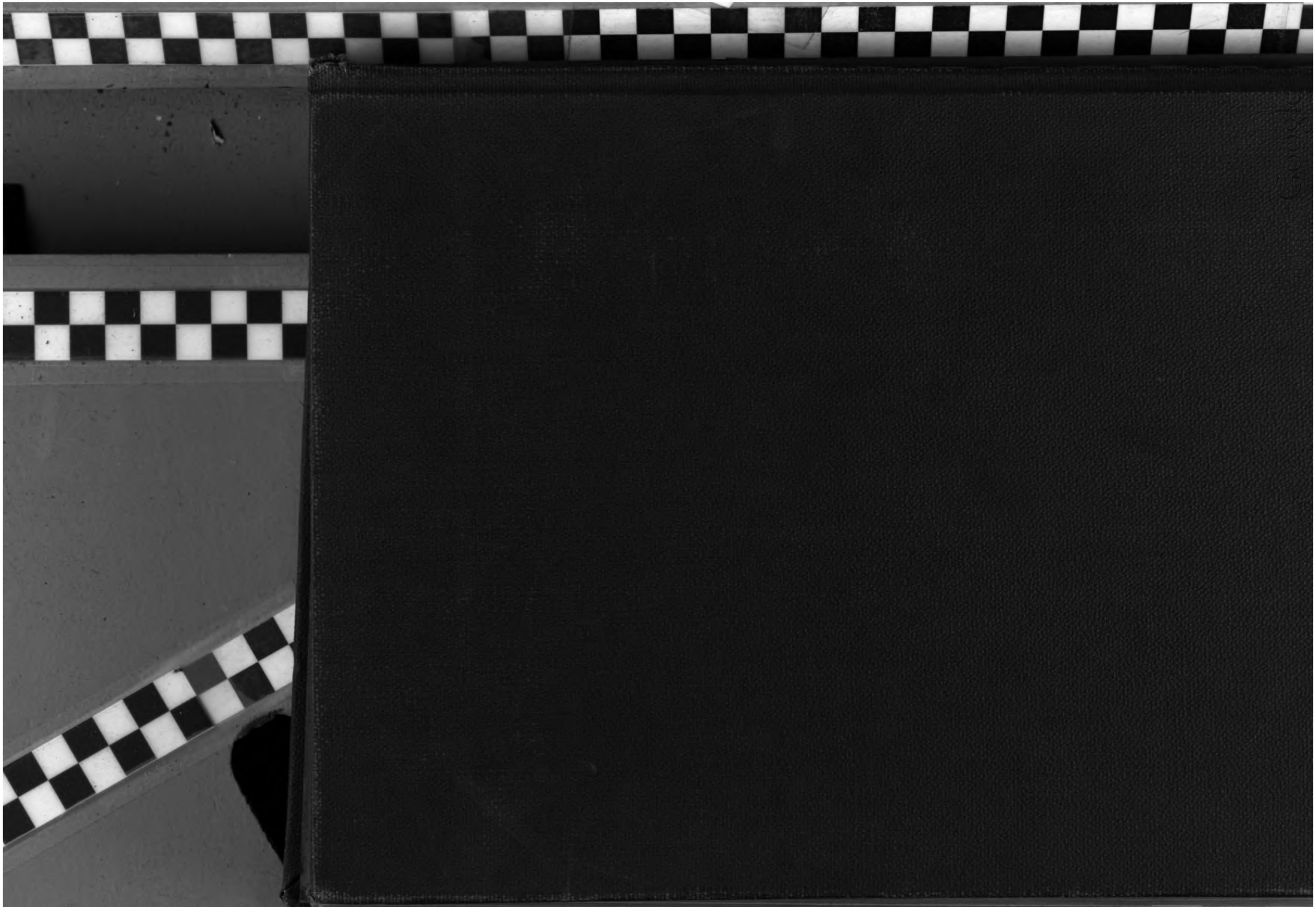

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